



THE LIBRARIES
COLUMBIA UNIVERSITY




HEALTH SCIENCES
LIBRARY

END

5 1980

NOV



Digitized by the Internet Archive
in 2010 with funding from
Open Knowledge Commons

ANNUAL REPORT

OF THE

N. Y. (state) - METROPOLITAN



BOARD OF HEALTH.

1866.

ALBANY:

VAN BENTHUYSEN & SONS' STEAM PRINTING HOUSE.

1867.

METROPOLITAN BOARD OF HEALTH.

COMMISSIONERS.

SANITARY COMMISSIONERS.

JAMES CRANE, M. D.

WILLARD PARKER, M. D.

JACKSON S. SCHULTZ,

President.

JOHN O. STONE, M. D.

JOHN SWINBURNE, M. D.,

Health Officer of the Port.

POLICE COMMISSIONERS.

THOMAS C. ACTON.

JOHN G. BERGEN.

JOSEPH S. BOSWORTH.

BENJAMIN F. MANIERRE,

Treasurer.

EMMONS CLARK, .

Secretary.



OFFICERS OF THE BOARD.

SANITARY SUPERINTENDENT,
EDWARD B. DALTON, M. D.

ASSISTANT SANITARY SUPERINTENDENT,
JOHN T. CONKLIN, M. D.

REGISTRAR OF VITAL STATISTICS,
ELISHA HARRIS, M. D.

DEPUTY REGISTRAR OF VITAL STATISTICS,
R. CRESSON STILES, M. D.

CORRESPONDING SECRETARY,
ELISHA HARRIS, M. D.

COUNSEL,
D. B. EATON.

ATTORNEY,
GEORGE BLISS, JR.

ENGINEER,
WILLIAM E. WORTHEN.

STANDING COMMITTEES.

SANITARY COMMITTEE,
COMMISSIONERS STONE, PARKER, AND CRANE.

FINANCE COMMITTEE,
COMMISSIONERS MANIERRE, BERGEN, AND STONE.

COMMITTEE ON LAW AND ORDINANCES,
COMMISSIONERS BOSWORTH, ACTON AND SWINBURNE.

The President is, ex-officio, a Member of all Standing Committees.

State of New York.

No. 241.

IN ASSEMBLY,

March 6, 1867.

ANNUAL REPORT

OF THE METROPOLITAN BOARD OF HEALTH.

To the Assembly :

I transmit herewith the Annual Report of the Metropolitan Board of Health.

R. E. FENTON.

REPORT.

To the Governor of the State of New York:

The Board of Health of the Metropolitan Sanitary District of the State of New York, composed of the counties of New York, Kings, Westchester and Richmond, and of the towns of Newtown, Flushing and Jamaica, in the county of Queens, in accordance with the 19th section of chapter 74 of the Laws of 1866, respectfully transmits its annual report for the year 1866. This is its first report, and includes a general review of its proceedings from March 5th, 1866, the day of its organization, to the 1st of November, a period of nearly eight months.

Sanitary science has attracted considerable attention during the past eighty years, but it is only recently that an earnest interest in the subject has been manifested. This is a remarkable fact, considering the antiquity of the Mosaic code, the greatest collection of health laws ever published, and the numerous examples of sanitary intelligence furnished by ancient Greece, Rome and Carthage.

The Hebrew laws directed what animals should be used for food, how they should be slaughtered, and that, if diseased, they should be rejected; and included rules for the conduct of the sexes and for the observance of cleanliness in their persons, homes and camps. Formerly these laws were imperfectly understood, but they are now acknowledged to be of supreme wisdom. Divine in their origin, they were impressed upon the minds of the people in the awful words, "thus saith the Lord." They were enjoined by threats of punishment and premature death to the disobedient, and by promises of happiness and long life to the faithful.

Greece and Rome built aqueducts, gymnasia, baths and sewers, some of which still remain, and enacted laws relating to food, which were calculated to produce a hardy race of soldiers.

The world fell back into barbarism, and all sanitary measures were neglected. The plague prevailed annually in Europe, and, as is supposed, carried off fully one third of the inhabitants.

The great fire of London, in the year 1665, followed the great plague. "It destroyed thirteen thousand houses and eighty churches, in four hundred streets. After this the city was rebuilt, with more roomy houses and broader streets, and the plague never returned again. The imperfect drainage still exposed the city to fevers and dysenteries, and from the former cause alone the annual mortality was between one and two thousand." The great fire was an impressive lesson as to the value of sanitary measures, and London, by gradual improvements, has become one of the largest and healthiest of cities, and has reduced its mortality from one in twenty to one in forty-five of its inhabitants.

It is interesting to trace the reduction of the mortality, as civilization has advanced. In Geneva, the average length of life is now forty-five years. In 1833 and the ten years previous, it was forty years and five months. Two hundred years ago, the average period of life in that city and Canton was only twenty-one years. Marc d'Espine, a celebrated authority, shows that in Geneva from A. D. 1500 to A. D. 1600, the probable length of life was five years, and in the succeeding century eleven years, and at the close of the next century from 1790 to 1800, it was thirty-two years.

In England, in 1801, the mortality was 1 in 44.

In England, in 1821, the mortality was 1 in 58.

In France, in 1781, the mortality was 1 in 29.

In France, in 1802, the mortality was 1 in 30.

In France, in 1823, the mortality was 1 in 40.

In London, in 1700, the mortality was 1 in 25.

In London, in 1751, the mortality was 1 in 21.

In London, in 1801, the mortality was 1 in 35.

In London, in 1811, the mortality was 1 in 38.

In London, in 1840, the mortality was 1 in 40.

Since last date, the mortality was 1 in 45.

Dr. Harris furnishes the following statistics for London :

In 1848, the mortality of London was 25.83 to 1,000	} Epidemic Cholera prevailing.
In 1849, the mortality of London was 30.08 to 1,000	
In 1850, the mortality of London was 20.94 to 1,000	
In 1851, the mortality of London was 23.38 to 1,000	
In 1852, the mortality of London was 22.61 to 1,000	

In 1853, the mortality of London was 24.48 to 1,000 } Epidemic
 In 1854, the mortality of London was 29.53 to 1,000 } Cholera
 In 1855, the mortality of London was 24.31 to 1,000 } prevailing
 In 1856, the mortality of London was 22.09 to 1,000
 In 1857, the mortality of London was 22.41 to 1,000
 In 1858, the mortality of London was 23.90 to 1,000
 In 1859, the mortality of London was 22.69 to 1,000
 In 1860, the mortality of London was 22.49 to 1,000
 In 1861, the mortality of London was 23.18 to 1,000
 In 1862, the mortality of London was 23.58 to 1,000

The death rate in the most populous city of the world has decreased as sanitary measures have been adopted, the prevalence of epidemic diseases occasionally occurring to prevent the diminution from year to year. The same diminution of the mortality is noticed in American cities, with the exception of New York.

In Boston, 1855, the mortality was 1 in 39.

In Boston, 1863, the mortality was 1 in 41.

In Providence 1854, the mortality was 1 in 36.

In Providence since then, the mortality was 1 in 43 to 57.

The present mortality in London is 1 in 45.

Liverpool, 1 in 44.

Philadelphia, 1 in 44 to 57.

The following Table of the Death-rate for the City and County of New York, from 1810 to 1865, is furnished by Dr. Harris.

DEATH-RATE.

(CITY AND COUNTY OF NEW YORK, 1810 TO 1865.)

1810.	1815.	1820.	1825.	1830.	1835.	1840.	1845.	1850.	1854.	1855.	1857.	1860.	1863.	1865.
1 in 46.50	1 in 41.80	1 in 37.20	1 in 34.40	1 in 39.00	1 in 40.40	1 in 39.70	1 in 37.50	1 in 33.50	1 in 23.00	1 in 27.50	1 in 27.20	1 in 36.00	1 in 32.00	1 in 33.33
21.50 in 1000	23.90 in 1000	26.80 in 1000	29.07 in 1000	25.64 in 1000	22.22 in 1000	25.19 in 1000	26.66 in 1000	29.85 in 1000	43.48 in 1000	36.36 in 1000	36.76 in 1000	27.77 in 1000	31.25 in 1000	30.30 in 1000

So that New York, with its bountiful supply of water and more eligible situation, when compared with London, has increased its mortality from 1 in 46½ to 1 in 33⅓.

How much can be accomplished by proper precautions in securing the health and lives of the people, is demonstrated by the following statement of Dr. Harris :

“In one of the most densely populated wards (the Fifteenth ward of New York), the death rate has been for several years less than 17 to the 1,000, and even during the terrible heat of last

July, the uniform low mortality of that section was scarcely affected. The death rate in this ward with its 27,000 inhabitants, was, during the six months ending October 1st of the present year (1866), at the rate of 16.31 to the 1,000. In the same period, from April 1st to October 1st, 1866, there were in the Sixth ward, bounded by Chatham, Canal and Broadway, 571 deaths, equivalent to an annual mortality of 54.63 to the 1,000. The Fifteenth ward was insalubrious until it was sewered, paved and improved in the character of its population. Its boundaries are Fourteenth street on the north, Bowery on the east, Houston street on the south, and Sixth avenue on the west. The same success of sanitary precautions is manifested in the notoriously unhealthy parish of St. Giles, in London; every street and court has been brought under control, and the death rate has decreased from 50 in the 1,000 to less than 15 in the 1,000 annually. The same facts are established in Liverpool, Glasgow, Manchester and Salisbury, 'the sick city healed,' in which the mean rate of mortality was, by sanitary improvements alone, in ten years, reduced from 28 deaths in 1,000 to 15 in 1,000. Could the same improvement have been made in New York, during the ten years preceding 1865, with a similar reduction of the death rate, more than 12,000 lives would have been saved during that one unhealthy year. The rate of mortality that year was, on an estimated population of 825,100, precisely 30 to the 1,000; the total deaths reported by the city inspector that year, being 24,843."

The mortality among children in American cities is frightful; one-third die in the first year, and one half before they have attained their fifth year. Even here there are gratifying signs of improvement, for the mortality is much less than formerly.

In Geneva, records have been kept since 1590, and it has been ascertained that a child has now five times greater chance of living to the age of twenty-one years than it had three centuries ago. Notwithstanding occasional exceptions, the rule has been one of improvement; and it has been stated that during the last seventy-five years the average period of human life has been prolonged ten years. What a remarkable fact! Conceive of the misery avoided, the pauperism prevented, the diminished tax upon the world in the way of charities to support the destitute poor, the increased industry added to the nations from such a multitude of healthy and productive laborers, and the future value of a healthy progeny from so enlarged and vigorous a stock.

A single glance at such results shows the value of sanitary knowledge, and elevates hygiene as a science, which is destined to do more good than all the medicines that were ever discovered or administered to suffering humanity. This subject must arrest the attention of statesmen and legislators; for upon the observance of these laws depend national wealth, power, and greatness, and upon their neglect, national decay and ruin.

But to return to the children, "the hope of the nation." All must be humiliated at their great mortality, unless an explanation of the fact can be discovered. It would seem that we can succeed in raising domestic animals, but fail in rearing our own children. Are the means used or the circumstances which surround infancy to be blamed for this? We believe that it is filth and its concomitants which cause this great destruction of life. The heat of our summers is excessive, but that alone cannot account for it; for there are certain portions of the city, where cleanliness, water, and good food abound, which show very moderate bills of mortality. Hot weather and filth, which, combined, originate the thousand of odors which vitiate the atmosphere, destroy these delicate beings. To this cause must be added the bad constitutions inherited from parents. Children, as a rule, do not during the first four years of their life, show the external signs of this diseased constitution; but it exists, and undoubtedly exerts a depressing influence, and renders the child less able to bear up against the destructive tendencies of disease. A physician can do very little with these inheritors of scrofula and syphilis, when attacked by other diseases; he is expected to treat them successfully, but cannot explain to the disconsolate parents the cause of his failure. His resources are powerless against the sickness which is made virulent by the sins of ancestors, and although he fails, he cannot but admire the Infinite wisdom which cuts off, thus early, these puny-bodied and feeble-minded creatures, before they are old enough to generate their kind. In the struggle for life the weakest die and the strongest live, and by the action of this law the race is improved. We see its agency in individuals of the same race and in the different races, when compared with each other. The weaker cannot improve, and must be overridden and finally supplanted by the stronger. Admitting this to be the fact, it is nevertheless true that the circumstances, which curtail the lives of human beings, can be so arranged that even the diseased may outgrow their inherited vices and constitution, and their descendants, in the

course of a few generations, may become strong and healthy. We believe that in the course of time the intermarriage of diseased persons will cease, and, under wise laws, men will live their allotted term.

What has been said of the causes of disease among children may be applied to all the preventable diseases of the race. Most of the fevers, diarrhoeas, dysenteries and consumptions are caused by bad air, impure water, insufficient food and ill-ventilated dwellings; and small pox, measles and scarlatina, although they have a specific origin, are aggravated by the existence of these causes. From the neglect of sanitary precautions, two hundred years ago, the cities would have become depopulated, if it had not been that they were constantly renovated by new blood from the country; and it is a fact that even now, in our large cities, this source of their invigoration is their salvation.

All suffer from the neglected causes of disease, but the poor pay the heaviest penalty. Their labor is their only capital, and the whole of it is often sunk in the contest with disease. Drunkenness, dissoluteness and wretchedness are found growing like luxuriant weeds in all places where bad air and poor food are found, and the offspring of these sufferers is brought up in neglect, without the physical ability to do the work of the world, decrepit, diseased and dependent. It is estimated that to every death there are twenty-seven cases of sickness; so that in New York, on the supposition that there are eight thousand preventable deaths a year we have a total of two hundred and sixteen thousand cases of illness which might have been prevented.

The advancement of medicine as a science proves that remedies given in the old empirical manner, are useless and injurious. The physician now studies the action of nature in the various functions of the human body, both in health and disease. In connection with the study of diseased action arises, necessarily, the perception of the essential nature of the disease itself, and, consequently, of the multitude of causes which produced it, and which, when produced, imperilled life. To study and avoid these causes is true sanitary science, and to medicine it offers a glorious future.

The religious and moral obligations of man to his fellow-men have of late years assumed a nobler and more philosophical development. No individual can succeed in any great reform, or even be secure in his own personal elevation, unless the race advances with him, and this cannot be expected so long as the majority are

overworked and underfed, and compelled by the necessities of their condition to neglect their moral improvement and the cultivation of the intellect. Labor saving machines, and a shorter time devoted to work, may have in reserve a great prospective good.

In the earnest effort to save the souls of men, it has often been forgotten that the sure way to success is to begin with relieving their bodily necessities. As physical comfort leaves time for the cultivation of the moral nature, so the discipline of the intellect is not to be left out of the calculation in its influence over the physical well-being; for it increases human wants and furnishes expedients to provide for them, and under suffering and hardships supplies a new and unbending spirit.

It was ascertained by the Rev. Mr. Clay, at Preston, in 1843, that, taking one hundred persons from each of three classes, of gentry, tradesmen and operatives, at the age of twenty years, seventy-six of the gentry, fifty-one tradespeople, and thirty-one operatives were living. Dr. Lyon Playfair furnished to the British government the following information for Liverpool: That the average age at death of the gentry was forty-three years, tradesmen nineteen, and of the laborers sixteen—the average of all classes being twenty years.

The extremes of human condition are the same in all countries. On the one side are debasement in look and condition, crime, barbarism, inability to read and write, hardly a knowledge of a God, and a short life; on the other, length of days, beauty of person and bearing, elevation of character, and vigorous minds and bodies.

But the influences of a common nature exact from each a mutual dependance and sympathy. Freedom from corroding cares, abundance of good food, and the possession of comforts, all of which are hygienic considerations, are at the foundation of the differences that exist.

The Hebrews made long life in this world the prime consideration; the Christians eternal life in the next world. But it is strange that Christians who acknowledged the divine authority of the Old Testament, should not have adopted some of the laws inculcated for the preservation of health. They forgot all obligations in this particular until experience had taught them that if they neglected them they should die, and this is now, as ever, the law of God.

Everything conspires to make hygienic measures the great ques-

tion of the age ; enlightened self-interest, the good of mankind, economic considerations, public and private, the wealth and power of the State, and religious obligations unite to urge this knowledge and observance upon every member of the community. In order to succeed, we need the co-operation of the majority of the citizens, and then we can compel ignorance and selfishness to cease their opposition. It is not the day to despair, for the future is full of promise.

SANITARY CONDITION OF THE METROPOLITAN DISTRICT.

It would naturally be supposed that New York, situated upon a narrow island, surrounded by rivers, supplied with pure air from the ocean or from the highlands of the Hudson, with its broad streets and avenues, its liberal supply of pure drinking water, and the facilities for drainage, would be one of the healthiest cities in the world. The city of Brooklyn is also admirably situated, is well supplied with pure air and water, and covers more ground than New York in proportion to its population. The peculiar sanitary advantages of the two cities, have, probably, saved them from numerous destructive epidemics; but a reliance upon these advantages has produced an indifference to the growth of the destructive nuisances which now cause so fearful a mortality in their filthy and crowded districts. New York is the great commercial city of the country, and the entrepôt of three hundred thousand immigrants yearly. Many arrive with broken constitutions, and soon sicken or die; many, especially of the Irish and Germans, become permanent residents in the city and vicinity. An entire change takes place in their habits, their previous lives having been spent in agricultural pursuits and in the open air. They crowd the filthy and ill-ventilated tenements, which are rendered pestilential by a hot sun in summer, or by artificial heat in winter. Meats and spirituous liquors abound to which they have not been accustomed, and they use them to excess. Sunstroke, which is rare among the native population, is common among immigrants, and a certain amount of acclimation seems necessary to secure their safety. These causes considerably increase the death-rate in New York and Brooklyn, while the smaller towns of the district, being less densely crowded, suffer only occasionally and in a more limited degree.

When the Metropolitan Board of Health commenced its labors, the cities of New York and Brooklyn were filled with nuisances, many of them of years' duration. The streets were uncleaned ;

manure heaps, containing thousands of tons, occupied piers and vacant lots; sewers were obstructed; houses were crowded, and badly ventilated, and lighted; privies were unconnected with the sewers, and overflowing; stables and yards were filled with stagnant water, and many dark and damp cellars were inhabited. The streets were obstructed, and the wharves and piers were filthy and dangerous from dilapidation; cattle were driven through the streets at all hours of the day in large numbers, and endangered the lives of the people; slaughter-houses were open to the streets, and were offensive from accumulated offal and blood, or filled the sewers with decomposing animal substances. Gas companies, shell-burners, and fat-boilers, pursued their occupations without regard to the public health or comfort, and filled the air with disgusting odors. When complained of, they asserted that their private rights were invaded, and that their pursuits were not prejudicial to the public health. They virtually claimed that the fumes of sulphuretted hydrogen, carbonic acid or carbonic oxide did not vitiate the pure atmosphere, which had been made with its exact proportions of oxygen and nitrogen, for the purpose of securing physical and mental vigor.

THE HEALTH LAWS OF NEW YORK.

Immediately preceding and following the year 1800, most of the health laws were properly quarantine laws, and were intended rather to shut out disease from New York than to prevent its originating within the city limits. Most of the health laws passed since that period were valuable in many respects, but were not sufficiently comprehensive in their character, or properly enforced. For several years, the physicians of New York have endeavored to obtain the necessary legislative enactments and the establishment of a board of health, with full power to correct the many existing abuses and to prevent the great mortality that prevailed, but they were uniformly unsuccessful in their efforts.

Two years ago, the Citizens' Association, in connection with several eminent physicians, commenced a sanitary inspection of the city. Medical men were appointed as Inspectors to ascertain the nature of the soil and the character of the drainage, to survey and describe the crowded tenement-houses, to locate upon maps the places where fevers and diarrhœa abounded, and to examine, as far as possible, into all the causes which affected the public health. The result of their labors was published, and is a work

of great value, not only to the present generation, but as a book of reference by which to judge of the future sanitary progress and condition of New York. The enterprise and energy of these gentlemen are worthy of all honor, and their influence and efforts were largely instrumental in securing the passage, on the 26th of February, 1866, of the Act "to create a Metropolitan Sanitary District, and Board of Health therein, for the preservation of life and health, and to prevent the spread of disease."

ORGANIZATION OF THE METROPOLITAN BOARD OF HEALTH.

The Sanitary Commissioners, appointed by the Governor, by and with the consent of the Senate, under the act above referred to, met at the office of the Secretary of State at Albany, on the first day of March, and proceeded, under his direction, to determine, by lot, which of them should hold for the respective terms of one, two, three, and four years, the said office of Sanitary Commissioner. Having taken the oath prescribed for State officers, the Commissioners received from the Secretary of State, certificates of appointment for their respective terms of office, as follows :

James Crane, one year ; Willard Parker, two years ; Jackson S. Schultz, three years ; John O. Stone, four years.

On the 2d day of March, a preliminary meeting was held at the central department of the Metropolitan Police, No. 300 Mulberry street, New York, at which were present—the Sanitary Commissioners, Dr. James Crane, Dr. Willard Parker, Jackson S. Schultz, Dr. John O. Stone, Dr. John Swinburne, and the Police Commissioners, Thomas C. Acton, John G. Bergen, Joseph S. Bosworth and Benjamin F. Manierre. Jackson S. Schultz was elected president of the Metropolitan Board of Health, and Benjamin F. Manierre was elected treasurer.

On the 5th of March, the board completed its organization by the election of Emmons Clark as secretary. At a meeting of the board held on that day, a bureau of vital statistics was established, and Dr. Elisha Harris was appointed registrar of vital statistics. A resolution was adopted requesting F. I. A. Boole, late city inspector, to deliver to Dr. Harris all the public books, records, statistics and papers, mentioned or referred to in section 13 of chapter 74 of the Session Laws of the State of New York. With this request Mr. Boole promptly complied. To the registrar of vital statistics was assigned the duty of recording all births, marriages and deaths, and of granting permits for the disinterment or

METROPOLITAN BOARD OF HEALTH.

removal of the bodies of deceased persons from the city of New York, and permits for burial. The appointment of a deputy registrar of vital statistics, to perform the same duties in and for the city of Brooklyn, was also authorized, and Dr. Joseph B. Jones was temporarily appointed to that office. Physicians were instructed to make all reports to this board, which heretofore they had been required by law to make to the city inspector, the board of health, or to the mayor and commissioners of health; and sextons and undertakers were required to surrender all burial permits and other blanks supplied to them by the late city inspector, and in all cases to make the necessary reports exclusively to this board.

The Board of Metropolitan Police was requested to execute and enforce the orders of the Metropolitan Board of Health, relating to cleanliness and the preservation of life and health; also, to ascertain and report to the Metropolitan Board of Health, once in each week, the streets and parts of streets, wharves, bulkheads, and piers, not cleaned in the cities of New York and Brooklyn, in pursuance of contracts for street cleaning in the respective cities. The Board of Metropolitan Police having tendered the use of that part of its large and commodious building fronting on Mott street, the office of the Metropolitan Board of Health was established at No. 301 Mott street. Dr. Edward B. Dalton was elected sanitary superintendent, and D. B. Eaton was elected counsel, and George Bliss, Jr., attorney to the Board.

At a meeting held on the 10th of March, Dr. John T. Conkling was elected assistant sanitary superintendent, and Dr. R. Cresson Stiles was elected deputy registrar of vital statistics, and detailed for duty to the city of Brooklyn, and their offices located at the city hall. Eight sanitary inspectors were appointed for the city of New York, and six for the city of Brooklyn, and were subsequently assigned by the sanitary superintendent to the several districts into which the cities had been divided. Bowen G. Lord, captain of the sanitary company of Metropolitan Police, and the force under his command, were also authorized to make inspections and investigations of and in relation to, any and all matters enumerated in section 14 of chapter 74 of the Session Laws of 1866, and to report thereon to this Board. The Board of Metropolitan Police was directed to enforce all laws and ordinances of the cities of New York and Brooklyn relating to the preservation of life and health and the prevention of disease, and to serve all notices and execute all orders issued by this Board. "Complaint

books " were ordered to be placed in the station-houses of all the police precincts, and citizens were publicly invited to enter therein their complaints against existing nuisances.

At a meeting he'd on the 30th of March, the sanitary committee recommended that, on account of the condition of the city and the impending danger from cholera, thirty clerks, to act as assistant inspectors, should be appointed for a period of two months, and be detailed for duty in various parts of the district. At the same meeting, clerks or assistant inspectors were appointed for Yonkers and Morrisania, and subsequently, upon application of the local authorities, clerks or assistant inspectors were appointed for nearly all the rural towns in the Metropolitan Sanitary District. These clerks or assistant inspectors continued in the service of the Board until the disappearance of the cholera from the district, when they were honorably discharged, with the thanks of the Board for their promptness and fidelity. On the 30th day of March William E. Worthen was appointed engineer to the Board.

The following report of the sanitary committee, upon the duties of sanitary inspectors, was approved by the Board, and the sanitary superintendent was directed to furnish each inspector with a copy :

" 1. The inspectors will keep constantly in mind the great good to society and the scientific value of the knowledge expected to be gained by the present system of health police. It is desirable that they should take especial interest in all sanitary questions, and keep themselves informed of what is being done at home and abroad relative to the causes which affect health or disease. Thus they will contribute their full share to the accumulation of knowledge which is destined to prolong human life, and establish the science of medicine on the most permanent foundations.

" 2. So much depends upon the conscientiousness, intelligence and industry of the inspectors, that they will be held to a strict accountability. They will be subject to the immediate control of the superintendent, or his deputy, and obey orders with promptness, and relinquish the demands of private business, in order the better to observe the obligations imposed upon them by their office.

" 3. They shall present themselves at the office of the superintendent, or his deputy, in Brooklyn, as often as is required by them, to receive orders and to make reports; nor are they to consider that their duties are limited to the districts to which they may

have been assigned, but must feel that they are bound to leave their districts and examine into complaints or sickness elsewhere whenever the superintendent or his deputy may deem it advisable thus to employ them. They are to watch over all cases of fever or small-pox, and if the patients are removed, to follow them with their supervision.

"4. Any perversion of the truth, from fear or interest, or any disrespect to the Board or its officers, on the part of the inspectors, will justify the superintendent, or his deputy, in suspending them from office, without pay, until action is taken by the Board, when the delinquents shall be censured or dismissed.

"5. All the forms for making reports must be filled up legibly and minutely, and any information added that will throw light on the subject under investigation.

"6. They shall wear their badges prominently displayed when engaged in their official duties. On entering any house or premises, they must announce their authority and the object of their visit, and while endeavoring to avoid giving offence, must make their investigations minutely.

"7. If resistance is offered to the performance of their duties, they are to report the fact to the nearest police station. They will likewise report all who violate the health laws, in order that offenders may be summarily dealt with.

"8. All questions of doubtful authority must be referred to the superintendent or his deputy for decision."

THE SANITARY INSPECTORS.

Although the law does not require that all the sanitary inspectors shall be physicians, the board has appointed none but thoroughly educated medical men to these responsible positions. Their peculiar duties require intelligence, a knowledge of chemistry, physiology, and hygienic laws, and a familiarity with the causes of preventable disease, and with the symptoms and treatment of typhoid fever, small-pox, and cholera. They were selected chiefly from among the active young men who had graduated at the medical schools and hospitals of the city. It was originally intended by the board that the inspectors and their assistants should make a complete and thorough sanitary survey of the built-up portions of the district, in order to discover the existence of any nuisances detrimental to the public health, and maps were to be made which should show each building, the

purpose for which it was occupied, the number of tenants, and its sanitary condition in detail. The advent of cholera, and the consequent necessity of immediate attention to the particular districts in which it appeared, and to the parties attacked by the disease, interfered, to some extent, with the plans of the board; but nearly every house in the district, especially in the filthy and crowded portions of it, has been visited by the inspectors during the season, and the immense amount of valuable labor which has been performed by these officers can hardly be estimated. All complaints by citizens have been referred to them for examination and report, and when such complaints were well founded, the nuisances have been promptly abated.

When the cholera appeared, the inspectors, in addition to their other duties, were required to investigate every case reported to the sanitary superintendent in New York, or the assistant sanitary superintendent in Brooklyn. Physicians and all others being compelled by law to report all cases to this board, and the police telegraph being freely used for that purpose, the inspectors were enabled to visit promptly the sick, and use the proper remedial measures. If the patient was already under medical treatment, the inspector did not interfere, except to direct the use of such disinfectants as seemed necessary; but if the patient was destitute and uncared for, the inspector caused his immediate removal to the hospital, and directed the disinfecting corps to cleanse or destroy the soiled bedding and clothing, and to disinfect the entire premises. As the cholera increased, additional inspectors were detailed to the headquarters in New York and Brooklyn, and were on duty both night and day, to answer immediately all calls for their services. The cholera hospitals established by the board were also under the immediate charge of the inspectors and assistant inspectors. For more full details as to their services, you are respectfully referred to the report of the sanitary superintendent. The sanitary inspectors and their assistants deserve the public gratitude. Always on duty, prompt to obey orders, exposed to many dangers, often acting both as nurses and physicians, they have doubtless saved many lives, and have been instrumental in preventing the spread of disease. It is a gratifying fact that, although some of them have been temporarily ill in consequence of their fatiguing and dangerous duties, none of their valuable lives have been lost from any cause during the epidemic.

ORDERS OF THE BOARD.

A report, in writing, is required of every inspection made by the sanitary inspectors, or by the members of the sanitary company of Metropolitan Police. These reports having been examined critically in the superintendent's department, such of them as require the action of the board are forwarded to the attorney for an endorsement of the proper order in legal form, or if a structural remedy is needed, to the engineer. The complaint and proof in each case having been presented to the board, the orders are entered usually in the form recommended by the attorney and engineer, and having been signed by the secretary, are forwarded to the sanitary police for service upon the owners, occupants, tenants or lessees of the premises upon which the nuisance exists.

The first orders of the board were issued on the 14th of March, between which date and the 1st of November, thirty-one thousand and seventy-seven orders were issued, and were duly served by the sanitary police. Of these orders, five thousand three hundred and twenty-five were under the *first sub-division* of section 14 of chapter 74 of the Session Laws of 1866, by the terms of which, the party served is allowed three days in which to demand a "hearing" by the board, of the testimony which may be presented to show that the order should be revoked and not enforced. In cases where no hearing has been asked for and the order has not been obeyed by the proper party, "final" orders, in the original or an amended form, to the number of three thousand one hundred and sixty have been issued and forwarded to the Board of Metropolitan Police for execution. All other written orders, in number twenty-two thousand five hundred and ninety-two, have been issued under the *second sub-division* of section 14 of chapter 74 of the Session Laws of 1866, and are of a peremptory character, requiring that the nuisance be abated within five days, and, if not obeyed, directing the Board of Metropolitan Police to enforce the same without further notice. The following is a statement of the subjects of the orders above referred to, other than the "final" orders, and of the work performed in the execution of the same, either by the party upon whom the order was served, or by the Board of Metropolitan Police, or by the officers or agents of this board:

Alleys cleaned	381
Alleys graded	4

Alleys paved	29
Alleys repaired	10
Areas cleaned.....	701
Ashes, garbage and rubbish, removed.....	1,335
Balusters repaired	6
Basements cleaned.....	230
Basements whitewashed	66
Bone and offal boiling (business of) discontinued	12
Brewing and distilling (business of) discontinued	3
Bridge (public) repaired.....	1
Cattle yards cleaned	2
Cellars cleaned.....	3,067
Cellars connected with sewers.....	62
Cellars drained.....	37
Cellars filled.....	182
Cellar grating repaired.....	1
Cellars whitewashed	653
Cesspools cleaned	686
Cesspools connected with sewer.....	45
Cesspools disinfected	56
Cesspools emptied.....	25
Cesspools filled	111
Cesspools made	131
Cesspools repaired.....	28
Chimney flues, obstructions in, removed.....	4
Chimneys repaired.....	16
Cisterns cleaned and emptied.....	771
Cisterns disinfected	76
Cisterns filled.....	328
Cisterns repaired	38
Cows removed (number of orders).....	119
Culverts cleaned	25
Culverts made	5
Curb stones reset to the established grade.....	76
Ditches cut.....	49
Drains cleaned	38
Drains made.....	136
Drains, obstructions in, removed	99
Drains repaired	138

Fat boiling (business of) discontinued	54
Flagging in yard repaired	22
Floors (house) repaired or relaid	61
Floors (privy) repaired	82
Garbage boxes made	7
Glue manufacturing (business of) discontinued	1
Gutters (house) repaired	50
Gutters (street) cleaned	114
Gutters, obstructions in, removed	21
Gutter stones reset to the established grade	305
Hair-curing (business of) discontinued	1
Halls cleaned	260
Halls whitewashed	161
Hide curing and storing (business of) discontinued	15
Horses disinterred and buried	2
Horses removed (number of orders)	3
Houses painted	1
Houses repaired	37
Hydrants removed	3
Hydrants repaired	159
Hydrant waste drained	209
Holes in streets filled	4
Jail ventilated	1
Kid leather manufacturing (business of) discontinued	1
Kindling wood business (method of conducting) modified	1
Leaders connected with sewer	4
Leaders (new) made	2
Leaders repaired	254
Lime burning (business of) discontinued	6
Lots cleaned	479
Lots drained	29
Lots filled	143
Lots graded	57
Manure depots removed	2
Manure removed	991
Manure vaults cleaned	22
Manure vault connected with sewer	1

Manure vaults constructed	492
Manure vaults (covers made for).....	38
Manure vaults disinfected	5
Manure vaults repaired	53
Market stalls removed	128
Offal boiling (business of) discontinued	1
Oil manufacturing (business of) discontinued	1
Packing rancid butter (business of) discontinued	1
Pavements repaired	4
Pickles manufacturing (business of) discontinued	2
Piers cleaned	30
Piers repaired	18
Pigs' feet and tripe boiling (business of) discontinued	2
Pig pens cleaned	299
Pigs removed (number of orders).....	331
Pipes (water, waste and hydrant), obstructions in, removed	46
Pipes (waste) cleaned	149
Pipes (waste) connected with sewer	1
Pipes (waste) repaired	427
Pipes (waste) trapped	26
Pipes (water) repaired	248
Pipes (soil) repaired	23
Plastering removed and walls replastered	47
Ponds drained	5
Ponds filled	42
Premises cleaned	2,581
Premises disinfected and fumigated	194
Premises connected with sewer	321
Premises painted	105
Premises repaired	81
Premises vacated	46
Premises whitewashed	871
Privies built	4
Privies disinfected	6,418
Privies emptied and cleaned	15,214
Privy houses removed	31
Privy houses repaired	195
Privy seats repaired	44
Privy sinks connected with sewer	2,056
Privy sinks filled	577

Privy sinks made	2,085
Privy vaults repaired	442
Pump (force) repaired	1
Rags removed	78
Rag sorting and cleaning (business of) discontinued	6
Roofs cleaned	30
Roofs repaired	174
Rooms vacated	22
Rooms and premises ventilated	25
Sausage case and gut cleaning (business of) discontinued ..	13
Sausage and tripe manufacturing (business of) discontinued ..	11
Sewers built	23
Sewers cleaned	157
Sewer connections cleaned	136
Sewers repaired	338
Sewer pipes, obstructions in, removed	1,493
Sewer pipes repaired	505
Sewer pipes trapped	20
Sheds removed	8
Sidewalks cleaned, and obstructions on, removed	42
Sidewalks repaired	130
Sinks disinfected	9
Sinks emptied and cleaned	2,625
Sinks repaired	18
Slaughtering (business of) discontinued	36
Slaughter houses cleaned	20
Soap boiling (business of) discontinued	5
Spaces (vacant) cleaned	162
Spaces disinfected	11
Spaces filled	5
Stables cleaned	657
Stables connected with sewer	24
Stables disinfected	6
Stagnant water removed	354
Stairways cleaned	68
Stairways repaired	30
Streets cleaned	17
Streets graded	1
Streets, obstructions in, removed	78

Superphosphate of lime manufacturing (business of) discontinued	4
Swill boiling (business of) discontinued	7
Tanks cleaned	1
Tanks constructed	24
Tanks for water-closets repaired	2
Tunnels cleaned	1
Urinals cleaned	29
Urinals repaired	6
Varnish manufacturing (business of) discontinued	3
Vaults cleaned	95
Vaults repaired	6
Walls and ceilings repaired	18
Water-closets cleaned	413
Water-closets repaired	66
Water-closets and urinals constructed	45
Water-closets disinfected	2
Wells cleaned and filled	6
Wells emptied and cleaned	1
Wire manufacturing (business of) discontinued	3
Yards cleaned	3,949
Yards drained	4
Yards graded and repaired	245
Yards paved	62

SANITARY IMPROVEMENT.

Considering the difficulties necessarily encountered by a new and inexperienced organization, the efforts of which have been repeatedly obstructed by the interference of the courts, this Board has been as successful in the abatement of nuisances and in the improvement of the sanitary condition of the district, as could reasonably be expected. The reform which has taken place and the sanitary work which has been accomplished, can be illustrated by a reference in detail to the matters which have engaged the attention of the inspectors and are the principal subjects of the orders of the Board.

1. *Areas, Yards and Alleys.*—The severe cold weather of last

winter, the irregularity and inefficiency of the street cleaning contractors in the removal of ashes and garbage when placed in the streets, and the general indifference of the people to sanitary matters, were the causes of large accumulations of filth in the yards, alleys and areas of the district during the spring of the present year. The visits of inspectors, the orders of this Board, and the general apprehension of an epidemic, soon accomplished the desired result and secured a remarkable state of cleanliness. The disputed ownership or control of many alleys made it difficult to fix the responsibility for filthiness upon individuals, and in aggravated cases, the necessary work was done by the agents of this Board. Frequent complaints have been received in respect to the improper and defective grading and paving of yards, by reason of which stagnant, waste, and offensive water accumulated in pools, or was discharged upon adjacent premises, often to the great annoyance of the owners. In these cases necessary repairs, proper grading and effective drainage have been ordered and generally with success.

2. *Ashes, Garbage and Rubbish.*—To secure the regular and thorough removal of ashes, garbage and rubbish, from the dwellings and tenements and from the streets of New York and Brooklyn, has been one of the most difficult and troublesome duties of this Board. Heretofore, there has been no regular and efficient system of transacting this business. Owners and occupants of dwellings and tenement houses have failed to provide suitable receptacles for ashes and garbage; tenants have often thrown their refuse into their yards or the public streets, while the carts of the contractors visited the most filthy streets rarely or irregularly, or passed through them without giving the notice required by law. The officers of this Board have labored to correct these abuses, first, by encouraging the introduction into every house one or more water-tight garbage boxes of convenient shape and size, which can be placed upon the sidewalk at a certain hour in the day, and returned to the area, house or yard, when emptied by the cartmen; and, second, by insisting that the contractors shall send a garbage and ash cart daily, and at a regular hour, through every street, which shall give notice of its presence, by the ringing of a bell, and shall empty all boxes and receive all garbage that may be offered. They have also insisted that new and tight carts shall be employed, and that the old, dilapidated and leaky ones shall be banished from the service. Arrests have been made for throwing

garbage in the streets, and the large stationary garbage boxes, reeking with filth and emitting the most offensive odors, have been removed or destroyed. Although the efforts of the Board have secured a partial reform, much remains to be accomplished.

In the city of Brooklyn, no contract exists for the removal of garbage, and this Board has been compelled to undertake its removal in cases where private enterprise and effort have failed, or where the public health has been endangered by its accumulation.

3. *Basements and Cellars.*—The sanitary condition of cellars and basements has attracted the attention of the Board, and the accumulations of filth which have been discovered, and the presence of water or extreme dampness have, doubtless, been the causes of considerable preventable disease. Large quantities of filth and rubbish have been removed; lime has been freely used, and the walls whitewashed. Cellars in which stagnant water was found, have been relieved by drainage and by connections with sewers, or have been wholly or partially filled with fresh earth. In the districts bordering upon the rivers, the cellars are constantly damp or wet from the action of the tides, for which there seems to be no remedy within the power of this Board. The use of cellars and of dark, damp and unventilated basements as habitations, is noticed in another part of this report. In the most aggravated cases, "orders to vacate" have been issued.

4. *Bone, Offal and Fat boiling.*—Since the organization of this Board all establishments of this character, in the built-up portions of this district have been closed, or have been compelled to conduct their business so that no offensive odors shall escape into the external air. The efforts to suppress these dangerous and offensive nuisances have met with a determined opposition, but after a tedious litigation, the orders of the Board have been respected obeyed, or enforced.

5. *Cesspools and Cisterns.*—Cesspools have been tolerated only in those cases where no other method of disposing of filthy and offensive fluids was possible or practicable. If allowed, it was expressly understood that they must be frequently emptied and cleaned, and during the warm weather disinfected with lime or copperas. But few new ones have been built, and many old ones have been filled up. The sanitary inspectors have discovered many old cisterns filled with stagnant water or used for the reception of various kinds of filth. These vile and offensive nuisances

have been abated by destroying the bottoms of the cisterns and filling them with earth or ashes to a level with the surface of the ground.

6. *Cows and Cow-stables*.—Since the organization of this Board the practice of keeping large numbers of milch cows in dark, crowded and unventilated stables, and feeding them upon swill from adjacent distilleries, has been almost entirely discontinued in New York. The cows have been removed and the stables cleaned and disinfected. The impurity of the milk furnished from these stables has been one undoubted cause of the great mortality among the children of the city. Arrests for diluting milk have been made, and the excellent sanitary laws in respect to this important article of food have been to some extent vindicated and enforced.

In Brooklyn, it has been more difficult to close the swill-milk establishments, as they are legalized by a special ordinance of the common council, which gives a monopoly to a special class, the distillers (see sec. 20, art. 4, chap. 5, of the ordinances of that city). The attention of the Board was early called to the filthy condition of the stables, to the diseased condition of the animals kept therein, and to the sale of the milk, which must be unhealthy in its character and pernicious in its effects. On the 16th of April, the health committee of the common council was induced to report an amendment to the ordinances, by which the owners of the distilleries would be deprived of their special privileges. The report of the committee and the amendment were "referred back with power to send for persons," and no further action has been taken upon this subject. The cows are crowded together in large stables, which connect with distilleries, and contain several hundred stalls. Milkmen hire a number of these stalls, in which they place their cows, and for a fixed price have them fed from the distilleries. Among the cows are those fresh from the country, others suffering in every stage of furuncular pneumonia, and still others "stump-tailed," and only able to stand while being milked. The legal protection to these establishments should be speedily removed.

7. *Culverts, Drains and Ditches*.—Stagnant water has, in many cases, been removed by freeing culverts from obstructions or by building new ones. In the suburban and rural districts ditches have been ordered, and have afforded great relief. A frequent subject of complaint has been the obstructions to drains, their

need of repairs, or their entire absence. The subject of drainage as a sanitary measure seems to be imperfectly understood, is rarely appreciated, and meets with unmerited neglect. The Board, by its orders, has endeavored to call the attention of the public to its importance, and hopes in future to be able to exert a salutary influence in securing the necessary reform.

8. *Curbstones and Gutters*.—The imperfect and careless manner in which curb and gutter stones are laid by contractors often results in extensive depressions from the established grade, which in filthy sections become receptacles for stagnant water, slops, filth and garbage. In very bad cases of this kind, orders have been issued that the stones be reset or relaid to the established grade. For the permanent relief of the public, it is necessary that a thorough revision of the grades should be made, and maps and specifications placed on file as established authority for the use and instruction of citizens and contractors; and that in all cases, original work be performed in the most careful and approved manner. Obstructions to the gutters by citizens in the erection or repair of buildings, or in their business pursuits, is of frequent occurrence, and to the extent of its power, this Board has labored to correct the abuse.

9. *Houses and Tenements*.—Sanitary improvement in the condition of tenement houses has been confined almost entirely to securing their immediate cleanliness; and the great and important questions of their proper supply of air and light, has been, for the time being, necessarily postponed. A large number have been cleaned and whitewashed, and those in which cholera has appeared, have been disinfected and fumigated. When damp and unhealthy from leakage, the roofs have been ordered repaired, and many sewer connections have been constructed, or have been improved. Your attention is respectfully directed to those parts of the reports of the sanitary superintendent and engineer which refer to this subject.

10. *Hydrants, House-gutters and Leaders*.—Many yards and alleys have been continually wet from leaky hydrants or from their careless use. In these cases they have been removed or repaired, and drains constructed to carry off the waste water. Cellars have also been rendered damp, wet and offensive, from defective roof-gutters and leaders, and the parties living adjacent to neglected premises have suffered severely from this cause. Leaky waste and soil pipes, generally resulting from cheap and

defective plumbing have been the subject of frequent complaints. The proper remedies have been applied, and the nuisances complained of abated.

11. *Lime and Shell Burning*.—The business of burning lime and oyster shells still continues, having thus far been protected by the courts against the efforts of this Board. The dust from these establishments fills the neighboring houses, destroying the comfort, endangering the health, and injuring the property of the inhabitants, while the offensive odors from the decomposition and burning of the animal matter contained among these shells, contaminate the air for many blocks around. No hope of relief can be anticipated until the legal restraints upon the action of this Board are removed.

12. *Manure, Manure-vaults, Stables, &c.*—The immense manure heaps which had been allowed to accumulate upon vacant lots, piers and places, have been removed, and no manure is now allowed to be stored in the cities of this district. The entire change in the manner of conducting this business caused considerable inconvenience, but it has gradually regulated itself, to the great satisfaction of the people. The section of the Code of Health Ordinances requiring the regular and frequent removal of manure from public and private stables, has been generally obeyed. Old manure vaults have been cleaned, disinfected, repaired, covered, connected with the street sewers or filled with earth and ashes, as the nature of the case required, and new ones have been constructed upon the most improved plans. Great improvements have been made in public and private stables, chief among which are, new sewer connections, water tight floors, and the general attention to cleanliness. The greatest difficulty has been experienced with those stables occupied by several parties, in which cases, it has been almost impossible to fix the responsibility for their proper sanitary condition.

13. *Piers*.—The obstructions upon the piers have prevented the contractors from cleaning them as required by law, and it has been difficult for many reasons, to enforce this duty upon the occupants and lessees. Many piers are in a broken, decayed and dilapidated condition, and during the present season several lives have been lost and many animals injured by reason of the gross neglect of this important part of the city property.

14. *Privies*.—No subject is of greater importance to large and
[Assem. No. 241.]

crowded cities, than the proper construction, care and condition of privies and water-closets. In comparison with former years, twice the amount of night-soil has been removed from the city of New York during the present season, and in the city of Brooklyn, this necessary work has been performed as satisfactorily as could be expected, considering the constant litigation between the contractors and the scavengers. The board has endeavored, by a system of licenses and permits, to regulate this business and to prevent the extortions and abuses which have been proverbial in respect to scavengers. Thorough disinfection of the contents has been required, and by this means, the noxious and offensive odors, common to the night, have been to a great extent avoided. New privy sinks have been constructed, and old ones repaired and connected with the sewer. Privy houses when dangerous to life from dilapidation, have been repaired, or, if not in use, have been removed and the sinks filled with earth or ashes. It is the desire of the board, for reasons both sanitary and economical, that all privies and water-closets should be connected with the street sewers; but during the present year, the want of the proper materials and the high price and great scarcity of labor have prevented this work being entirely accomplished.

15. *Rags*.—The traffic in domestic rags, as heretofore conducted in New York and Brooklyn, has been a source of disease and danger. Having been gathered into storehouses, from gutters, from hospitals, from the tenements and persons of those sick with infectious or contagious disease, and from divers other sources, these rags are partially cleaned and placed upon building and sheds, or in yards or the public streets, there to dry and constantly emit the most offensive and sickening odors. In aggravated cases, the business has been suspended and the rags removed, and a partial, but not general reform has been inaugurated. Restrictions upon foreign rags, imported in large and compressed bales, which are not opened in the city, have been materially modified.

16. *Sewers*.—Complaints in respect to defective or obstructed sewers have invariable been referred to the Croton Aqueduct department, and have received prompt attention. In streets where new sewers were recommended by this Board, as necessary for sanitary reasons, they have been constructed as soon as the specifications could be prepared and the work placed under contract, as required by law. The Croton Aqueduct department has been,

at all times, prompt to aid this board in its efforts for sanitary improvement.

17. *Slaughter-Houses*.—Under the orders of this Board, many slaughter-houses have been closed, some permanently, and others until they could be rendered tolerable by the construction of sewer connections, by improved ventilation, by closing the doors and windows from the public streets, and by the adoption of regular habits of cleanliness. At the present time, the slaughtering places within the district are generally as well conducted as the character of the business will admit. The section of the health ordinances requiring the daily removal of the offal to the pier assigned for its reception is, in most cases, faithfully obeyed. Abattoirs, and the slaughtering of animals, are noticed in detail in other parts of this report.

18. *Streets*.—When this Board was organized in March, the streets of New York were in a filthy and disgusting condition. The street cleaning contractors did not perform one half the duty required, and their work was, generally, done in a careless, and most unsatisfactory manner. A system of thorough inspection and report was instituted through the Metropolitan Police, and a map was prepared weekly in this office, upon which was noted the streets, alleys, and piers, cleaned, as well as those neglected. By this means the contractors were brought and held to a strict accountability, and the result was that New York has been blessed during the past season with comparatively clean streets. In the unpaved sections of the city, particularly in the Twelfth ward, considerable work has been done under the immediate order and control of the Board.

In the city of Brooklyn, where, practically, no contracts or arrangements exist for the proper care of the streets, this Board has been obliged to undertake, in the most filthy districts, this most important sanitary work, for the correct performance of which the city authorities are usually held responsible.

19. *Swine*.—The practice of keeping swine in the built-up portions of the district has prevailed for a long period. Under the code of health ordinances, and the special orders of this Board, the swine have been removed from New York and Brooklyn as rapidly as could be done consistently with the interests of the poor, many of whom depended for a subsistence upon the profits of keeping and fattening these animals.

In the outskirts of Brooklyn large number of swine are kept

by persons who have contracts for removing garbage from New York city. The garbage is collected in carts unfit for the purpose, and is transported across the ferries and through the principal thoroughfares to its destination, where it is boiled with offal and other refuse matter. Some of these establishments contain from three to four hundred hogs, and many of the largest ones are near the county buildings, in which there are usually two thousand persons, who are compelled to breathe an atmosphere vitiated by the most foul odors. It is hoped, that on or before the 1st February, they will be entirely banished. It is a fact worthy of notice that in those districts where pigs and pig-pens most abound, cases of cholera have frequently occurred, and it is the opinion of many observers that nothing is more calculated to develop and increase that disease than the filth and offensive odors which prevail in those localities.

20. *Vacant Lots and Ponds.*—The condition of vacant lots is one of the most important and difficult subjects which has engaged the attention of this Board. They frequently lie below the grade of the streets, are filled with stagnant water, and receive the garbage and dead animals of the vicinity. Often the names and residences of the owners cannot be discovered, even by a reference to the tax-books, and nuisances of the most dangerous character must remain undisturbed, unless this Board perform the necessary sanitary work at the expense of the public. The only remedy for this great evil is an amendment to the act, by which all work done by this Board, in the abatement of nuisances, can be made a "lien" upon the property in the same manner as State and city taxes. During the present season the most offensive lots have been cleaned, and in some cases, disinfected; drains have been built and the stagnant water removed, or they have been filled up with earth and ashes, and properly graded.

Brooklyn suffers more from sunken lots than any other part of the district. With the rapid growth of the city, streets without culverts or sewers were laid across low lands and marshes, thus obstructing the natural water-courses and the escape of tide-water. In the Twelfth and Sixteenth wards there is no drainage nor sewerage, and both are impossible except at immense expense, as the streets are only a few feet above low-water mark. It is the duty of the Common Council to fill in these lots upon the recommendation of the Board of Health, but in many cases this cannot be done except at the public expense, as the law forbids an assess

ment upon any lot, for this purpose, of a sum to exceed one-third of its value. The report of the engineer is referred to for details upon this subject.

Ponds of stagnant water in the rural parts of the district have been the subject of much complaint. Frequently the abatement of these nuisances requires the co-operation of several property owners, and is consequently difficult and tedious. All has not been accomplished that is desirable, and it seems necessary that the act should be so amended that the requisite work can be performed, and the expense be equitably assessed upon all who are responsible and directly interested.

CODE OF HEALTH ORDINANCES.

Pursuant to section 20 of chapter 74 of the laws of 1866, as amended this Board adopted, on the 20th day of April, a code of health ordinances, which was duly authenticated and advertised in compliance with the law. The Board took as the basis of this code, the sanitary ordinances in force in the cities of New York and Brooklyn, before the passage of the act creating a Metropolitan Board of Health, making thereto improvements and additions as seemed to be required by reason of the rapid growth and the more crowded state of the population, and by the progress and advancement in sanitary science. As the power has always been exercised by boards of this character, to make suitable rules and regulations for the preservation of the public health, this code has been generally respected and obeyed, and the courts have manifested a disposition to enforce these ordinances. Those arrested for its violation have been fined or imprisoned, and its moral and restraining influence has been most salutary in the correction of various abuses. For code of health ordinances and sanitary rules and regulations above referred to, see appendix schedule H.

THE SUPPLY OF FOOD.

After securing pure air and general cleanliness, nothing tends so directly to promote the public health as a proper supply of food; and to regulate and control the quality and supply of meat, fish and vegetables is the duty of the health authorities of all large cities. Free and direct communication between the producer and consumer is, for many reasons, very desirable; but when the public authorities interfere in this free interchange, by establishing public markets and compelling their use, great care is

necessary that the interests of the public do not suffer. Many old citizens can recollect when a portion of each market was devoted to the sale of vegetables and small meats, and was known as the "country market," in which countrymen, upon the payment of a small daily fee, could expose for sale the products of their farms and gardens; but this system has been supplanted by a process of forestalling, which monopolizes all the markets and compels the country people to sell from their wagons, and even this privilege is enjoyed within narrow limits and under great embarrassments. Not only are all portions of the desirable markets and surrounding sidewalk occupied by permanent stands or stalls, which are rented by the year, but the public streets are rapidly passing under the control of the middle-men. As an illustration, the streets for many blocks around Washington Market are occupied daily and nightly by what appear to be *country wagons*, although many of them belong to speculators residing in the city. In some instances these wagons are without wheels, and consequently become stationary obstructions in the street. When farmers and gardeners come to the city they are compelled to arrive early in the evening and take their places, six or eight hours before the opening of the market in the morning, in order to secure a suitable stand for the sale of their vegetables. This whole system of monopoly and forestalling greatly adds to the cost of market produce, and causes detentions which depreciate its freshness and quality. No single cause so directly tends to produce diarrhoeal diseases as the use of stale fish and vegetables. Yet this system of forestalling results in supplying the poor with the most unwholesome and dangerous food; for when a stock of vegetables becomes wilted or decayed the middle men dispose of it for a trifle, to the very poor, or turn it over to irresponsible travelling hucksters, to be distributed in the more humble and destitute portions of the city. The same is true of the supply of fish, and to a much more dangerous extent. The most effectual remedy for this great evil is to remove the present restraints upon the free access of the country people to the city markets. Country wagons should be allowed to stand in the vicinity of all the public squares, and in the triangles formed by the intersection of streets; and the wide streets, like Fourteenth and Twenty-third, could for this purpose be occupied, under such regulations as would render their use unobjectionable. By eight or nine o'clock in the morning, all these wagons should be required to leave their stands, and such fee should be collected as would

pay for the immediate cleaning of the streets and places thus occupied. The consumer of fruits and vegetables would thus be brought into immediate contact with the producer, to the great pecuniary advantage of both parties, and the promotion of the health and comfort of all classes of citizens.

Not only are the markets monopolized by forestallers, but many of them are occupied in part for purposes to which the market property should not be devoted. In Fulton market, for instance, liquors, boots and shoes, books, stationery and fancy goods are sold, and there are not less than fifty eating and oyster stands within this market enclosure; all use extensive fires, many of them open furnaces, for cooking. The result is that, in the spring and summer months, that portion of the market used for fish, poultry and meats is rendered almost valueless. The poultry and fresh meats soon spoil, and the air of the whole enclosure is rendered impure and offensive from the fumes which proceed from these eating establishments.

PUBLIC MARKETS.

The system and maintenance of public markets in this district, have scarcely changed (certainly not for the better) during the last quarter of a century. The old structures, long in use, still exist, with all the dilapidation incident to neglected public property. The lower portion of New York city contains four of these structures, viz.: Catherine, Fulton, Franklin and Washington markets. The latter has within a few years been twice indicted by the grand jury as a public nuisance, and the others richly deserve the same condemnation.

Soon after the organization of the Metropolitan Board of Health, a thorough inspection of the markets was ordered, and elaborate reports upon their sanitary condition were submitted by the sanitary inspectors. The report of inspector Emerson (schedule I, appendix) upon Washington market, shows the situation and sanitary condition of the most important public market in the country.

Independent, however, of the strictly sanitary condition of this and other markets, there are questions in respect to their continuance which no intelligent citizen can overlook, and which are so allied to the *safety of life*, that your attention is called to them in this connection. The crowded state of Broadway, Chatham and other streets leading to Wall street and the ferries, has for many years been the source of much consideration, and various projects

of an expensive character have been suggested as remedies for this evil. The practical operation of our present market system aggravates the difficulties complained of. The whole surrounding country pours its products into the lower portion of the city at Washington and Fulton markets and vicinity. At night and early morning, hundreds of country wagons may be seen in the streets adjacent to Washington market, and large numbers of hucksters' and grocers' wagons are also present to receive and distribute the various agricultural products. So great is the crowd and rush of this market traffic that during the forenoon it is almost impossible for merchants to deliver their goods to the various forwarding lines in the vicinity, and pedestrians experience great difficulty in passing through the crowd of wagons and carts in that section of the city. The remedy for the great inconvenience caused by the crowded state of the streets around these markets, is the removal of the markets to the upper part of the city. Immediate relief would be experienced by all the great commercial interests in the lower part of the city.

That the public treasury would be greatly benefited, will appear by the following official financial statements:

Statement of Comptroller A. C. Flagg, contained in his Report on Market Property (1854).

Market receipts for 1853	\$84,250 95
Market expenses for 1853—	
Clerks' salaries	\$7,819 76
Cleaning markets	7,600 00
Repairs about markets.....	16,000 00
Lamps and gas.....	7,397 97
Lamplighters	5,200 00
	<hr/> \$44,017 73
Interest on market property, valued at	
\$1,041,000	72,870 00
	<hr/> \$116,887 73
Deduct market receipts.....	84,250 95
	<hr/>
Deficiency	\$32,636 78
	<hr/> <hr/>

Statement of Mayor Opdyke, January 6, 1862.

The market property of the city according to latest valuation is worth \$2,131,000, exclusive of portions of Tompkins, Clinton, Essex, Union and Jefferson markets, which are omitted in the estimate, because they are now occupied without revenue to the city.

The gross amount of revenue from markets in the year 1860, was	\$117,944 92
Deduct amount paid for cleaning, lighting and salaries	51,214 85
Leaving the net revenue from this source.....	<u>\$66,730 07</u>

Statement from Comptroller Brennan's Annual Report and from other official sources.

Gross income from market property, including fees (for 1864)	\$171,983 71
--	--------------

Expenses:

Lighting	\$21,868 08
Repairs	34,556 00
Collecting rents.....	35,735 00
Sweeping	16,000 00
	<u>\$108,159 08</u>
	<u>\$63,824 63</u>

The above statement shows the net receipts for markets, independent of taxes and interest.

Estimating the value of the market property, independent of such portions as are occupied for other than market purposes, at \$2,131,000, as was done by Mayor Opdyke in 1862, on a gold basis, when real estate in the vicinity of this market property was certainly twenty-five per cent. less than at present, and computing interest at seven per cent., we have	\$149,170 00
and if to this interest we add city taxes which this property would incur in the hands of individuals....	63,930 00
	<u>\$213,100 00</u>
Showing a net yearly loss to the city of.....	<u>\$149,275 37</u>

The statement of the comptroller for the year 1865, is not more favorable, except that in his management of the market property he has continued to encroach upon the sidewalks and streets, and by collecting fees from all the country wagons, has somewhat increased the gross revenue. But the valuation of the market property in the comptroller's statement is the same as that of Mayor Opdyke, which was made upon the gold basis of January, 1862, and therefore the present percentage of rent appears slightly more favorable.

The present process of collecting market rents could be extended and made to appear still more favorable, by occupying Broadway with country wagons, and erecting sheds around our public parks, and then crediting the rents received thereby to the "markets." The city is not at present in the receipt of more than one and a half per cent. net on its market property, and if that property was charged with city taxes and interest, the entire revenue from the markets would not only be absorbed in the expenses to which the city is subjected in their management, but would bring the market property in debt the sum above stated.

SLAUGHTER HOUSES.

On not less than three occasions in the history of the city of New York, the slaughter-houses have been banished "without the city" and "to the river's bank." From the earliest period, the regulation of slaughter-houses and the control of the butchers, has been a prominent subject of municipal legislation. If these restraints were necessary when the population was sparse, and confined to the narrow space below Canal street, how much more important is it that they should be regulated now, when for all practical sanitary purposes, the whole island is occupied?

When this board was organized, there were not less than two hundred-slaughter houses in the city of New York, and fifty in the city of Brooklyn. These establishments were permitted to exist on some of the most populous streets and avenues of the city, surrounded by tenement houses containing as many as thirty to forty families each. No attention was paid to the drainage or other sanitary means of rendering these places cleanly and unobjectionable. In many instances these slaughter-houses had continued in the same location, for more than twenty years, and the blood and animal matter were allowed to flow into rudely constructed

cesspools, into the gutters of the street, or to the ground beneath the loose floors of the buildings.

The slaughter-houses of this district have been, and are, as at present conducted, the source of many great nuisances. They supply and make necessary the three hundred fat, bone, soap and gut boiling establishments, glue factories, tanneries, &c., &c., which are found in all parts of the district. All the entrails and offal which are produced yearly, from two hundred thousand cattle, eight hundred thousand sheep, seventy thousand calves and five hundred and fifty thousand hogs, must be carted through the streets, an average distance of two miles, to a single pier. This material is always conveyed in open carts or barrels, and the stench is often so offensive as to nauseate people in the public streets. This is especially the result when for any reason its removal is delayed, as is frequently the case, notwithstanding the regulations of this board, and the promises of the butchers.

The sewerage of New York is defective, and these defects are nowhere so apparent as in the streets and avenues upon which these slaughter-houses are located. The large amount of animal matter discharged into the sewers often causes obstruction, and the stench which is then forced back through the street culverts and manholes is unendurable. It is positively asserted that more noxious and poisonous gases escape into the air from this source than would result from the decomposition of human bodies if the whole island was a graveyard. In short, it is impracticable, if not impossible, to maintain a proper sanitary regulation over the slaughter-houses of this district, distributed and conducted as they now are; and at no distant day the slaughtering of animals should be entirely conducted in well regulated abattoirs, on the banks of the rivers. This change should be effected with strict regard to the rights, and to the best interests of all parties concerned.

The suffering caused to animals by the present system of slaughtering is a source of pain and annoyance to all persons living near these establishments. The animals are seldom fed from the time they arrive until they are killed, and constantly give expression to their sufferings. Many slaughter-houses are located in the center of blocks of high tenement-houses, and the business of slaughtering, as viewed from the adjacent windows, is in the highest degree demoralizing in its effects upon the young.

A result of the present system has been the nuisance and danger arising from driving cattle through crowded streets. Among the

first acts of this board was the passage of an ordinance prohibiting the driving of cattle, swine, or sheep, in the built-up portions of the district, except between nine o'clock, P. M., and one hour after sunrise in the morning. An injunction prevented the enforcement of this regulation during the summer; but all legal restraints having been removed by the courts, it is now in full force, and meets with general favor from the public.

ABATTOIRS.

The system of slaughtering animals as heretofore carried on in this district is conceded to be wasteful, and in a sanitary view, decidedly objectionable. The attention of this board was early called to the improved methods of slaughtering in abattoirs, to be properly constructed for that purpose, to contain machinery and appliances for promptly utilizing all parts of the animals not required for human food, and to avoid the offensive odors and all other disagreeable features of the old system. Having no authority to erect such abattoirs, the board could only encourage individuals to construct proper buildings for the business of slaughtering, at suitable distances from the built-up portions of the district. The result has been that three large abattoirs have been constructed: one at the foot of One Hundred and Sixth street, on the East river; one on New York bay, at Communipaw, New Jersey; and one on the Hudson river, between Hoboken and Jersey city. These abattoirs are fully capable of supplying all the beef and small meats that New York and Brooklyn can consume, and of salting and packing for other markets a larger quantity than has ever been produced in this vicinity. Of the economy of the new system there is not the least doubt, and the profits from utilizing those parts of the animal heretofore thrown away, will fully compensate for the large outlay in these new enterprises. The business of packing beef and pork, heretofore carried on so extensively in Chicago, Cleveland, and other western cities, will, to a great extent, be transferred to New York and vicinity; the animals will be transported by rail and slaughtered at the new abattoirs; such portions of the carcasses as are most desirable for immediate consumption will find a ready sale in this district, and the coarser parts will be cured and packed for home and foreign markets. The high price obtained for the choice parts of the animal, and the great profit arising from those parts for which there is no demand or sale in the western States will more than pay the addi-

tional cost of transportation. The consumers will be pecuniarily benefited by this change in the system of slaughtering. The supply of meat will be fresh, more regular and abundant. The many evils arising from the present disposition of the offal and blood will be entirely avoided ; for the proprietors of the abattoirs will carefully save and utilize every particle of animal matter. The locations of the abattoirs are well selected ;—the abattoirs at Communipaw and Hoboken will probably receive the most of the animals arriving by the railroads, which terminate upon the Hudson river in New Jersey, and the one at the foot of One Hundred and Sixth street, will dispose of the cattle brought to the New Bull's Head at One Hundredth street, by the Hudson river, Harlem and New Haven railroads. The stock arriving by the river barges can readily reach either establishment. The transfer of live cattle or of the meat, to or from these abattoirs, will be cheap and convenient, and the accommodations will be ample. Although the distance from Washington market to the new abattoirs is double the average distance to the places where slaughtering has heretofore been done, yet it is believed that the cost of transportation will not exceed one-half the price per ton heretofore paid.

Among the many advantages of the abattoir system may be noticed the facilities for cooling the meat with ice, while on the barges, and for moving it in large masses to its destination without regard to the state of the weather, and without those personal exposures and sacrifices of individual comfort, which are peculiar to the old system. Under that system several thousand men and boys were nightly deprived of their rest, and as a necessary consequence were exposed to the most pernicious physical and moral influences. To this cause must be attributed those rough characteristics, which popularly distinguish the employees of the butchers of the metropolis.

When the abattoir system is in full operation it is confidently predicted that all parties will gratefully accept the change, and that the sanitary condition of many portions of the district will be greatly improved. When the business heretofore transacted at two hundred slaughter houses, and forty fat, bone, and offal boiling establishments, located in the most densely populated portions of the cities of New York and Brooklyn, is removed and concentrated at three or four abattoirs, properly located on the banks of the East or North rivers, then, and not till then, will the several business pursuits, which have heretofore seemed to defy legisla-

tion and violate with impunity all the laws of sanitary science, be thoroughly and effectually controlled.

UTILIZING ANIMAL SUBSTANCES.

To properly dispose of, and utilize the various refuse materials of a large city, is a subject of great sanitary and economical importance. The defect in the present method of disposing of night soil, dead animals, offal, and garbage, are numerous, and both economy and sanitary science demand a radical change in the systems. The experience and practice of the large cities of Europe in these particulars are not entirely applicable to this district. In foreign countries fertilizers are fully appreciated; labor is cheap, and sanitary regulations are more strict and more rigidly enforced. New York and Brooklyn have great natural facilities for promptly disposing of their offal and garbage, yet under the present system a great part of this valuable material is allowed to putrefy and decay within the city limits, or upon the shores of the adjacent rivers and bays. The existing methods may be so modified as to secure a sanitary reform to the city, even though the pecuniary advantages remain to the present contractors. In collecting this material, covered tubs or boxes of convenient size should be used, and it should be conveyed to the wharves on properly constructed trucks. At least six piers should be devoted to the reception of this material (three on the North river and three on the East river), upon which should be erected permanent enclosed sheds. Dead horses and cows should be removed to these wharves in large covered wagons, or carts, so arranged that the contents should not be exposed to public view. The same piers and sheds could be used for the shipping of night soil, stable manure, street-sweepings, and ashes, and for this purpose should have the proper "dumps" instead of the present unsightly and dangerous contrivances for that purpose.

Four men and four one-horse carts now collect imperfectly all the garbage and swill from each city ward, and it is safe to say, that four two-horse trucks could thoroughly remove all the ashes and cinders in winter, and all the garbage in summer, from the same territory, besides performing such other sanitary work as is now entirely neglected. Large steam barges, with enclosed decks, should call at these docks at least twice daily and receive the offal and garbage. They should immediately proceed to an island in Long Island Sound, or to some other secluded place, and discharge

the swill and garbage, to be used in feeding and fattening large numbers of swine and poultry.

On the passage, the dead animals could be skinned and their flesh and all other offal placed in properly constructed caldrons, through which the exhaust steam from the boilers could be passed by coils or pipes; all vapors from the boiling caldrons could be condensed by methods now well understood, and no offensive odors would be permitted to escape and annoy the people upon the neighboring shores or upon passing vessels.

FAT AND BONE BOILING.

On the first of April last, not less than sixty fat and bone boiling establishments were distributing in this district their disgusting odors; many of them, from chimneys so high that their influences extended for miles around. This whole business of bone, fat, and gut boiling had, for years, been prohibited by city ordinances; but so powerful were the influence brought to bear upon courts and juries, that no conviction could be obtained.

When by the code of health ordinances, adopted by this Board, this business was prohibited, and an attempt was made to suppress it, great resistance was offered, and the appliances, which had heretofore been successful, were again tried, but failed. The injunctions having been dissolved, a prominent violator of the law was arrested, tried, and sentenced to sixty days' confinement. From and after this effort of the courts to sustain the law in respect to this business, no open violation of it has occurred.

Fat and bones are boiled as formerly, but the vapors and odors from the kettles are either superheated and burned, or are condensed and carried by the sewers into the rivers. It may be premature to pronounce both or either of these plans entirely practicable, but from inspections recently made great hopes are entertained of their complete success. It is somewhat doubtful, however, whether the condensed odors can safely be allowed to enter the public sewers, except where the establishments are in the immediate vicinity of the rivers. This subject is of so great practical importance, not only to this district, but to the whole country, that the report of inspector Moreau Morris is herewith presented (see Appendix, Schedule K). To his discriminating judgment, perhaps, more than to any other source, is due the various suggestions which have led to the present methods of deodorizing vapors. If they serve the purposes contemplated, viz.:

“So to control the odors that none shall escape into the external atmosphere,” the efforts of this Board will have been amply rewarded.

HOUSE GARBAGE.

Although the contract for cleaning the streets of the city of New York requires the contractors to remove all house garbage daily, great inconvenience has been suffered from the imperfect performance of this duty. A large part of the swill and garbage has heretofore been collected by individuals engaged in feeding and fattening swine, in the suburbs of the cities of New York and Brooklyn. With open wagons and carts, these collectors proceed from house to house, and in the most careless manner remove the swill and garbage from the kitchens to their rude vehicles. A considerable part is deposited on the sidewalks and in the gutters; the liquid portions leak from the wagons as they pass along the streets, and the ferry companies complain that the decks of their boats are defiled, and their passengers are annoyed, by this disgusting nuisance. The swill and garbage, when collected, is boiled (often in the vicinity of dwellings), and is then ready to be disposed of among the piggeries of the neighborhood. From first to last, this business is transacted in the most irregular, unsatisfactory, and offensive manner.

As the removal of house garbage is a duty of the street cleaning contractors, the necessary reform must proceed from them. When this business is properly organized and conducted, it will become a source of profit to the contractors, and afford great sanitary relief to the citizens of New York and Brooklyn.

SUB-LETTING OF DWELLINGS.

Many of the evils now experienced in the city of New York, from over-crowded and imperfectly ventilated dwellings, arise from the common practice of “sub-letting.” The owners of real estate do not, as a general rule, over-crowd their tenements; but they rent them on leases to “middlemen,” who are frequently of the most heartless and unscrupulous character, and who make large profits by sub-letting. They leave no space unoccupied; they rent sheds, basements, and even cellars, to families and lodgers; they divide rooms by partitions, and then place a whole family in a single room, to be used for living, cooking, and sleeping purposes. This system is practiced in the older portion of the

city to a fearful extent, especially in the Fourth, Sixth, Seventh, Tenth and Fourteenth wards. In these locations may be found large, old-fashioned dwellings, originally constructed for one family, sub-divided and sub-let to such an extent, that even the former sub-cellars are occupied by two or more families. As a general rule, modern tenement houses are so planned as to make further sub-division impossible.

When this Board of Health was organized, it was estimated that there was a "cellar population" of not less than twenty thousand in the city of New York. An effort has been made to reduce this number during the prevalence of cholera, and it is now estimated that not more than ten thousand to twelve thousand persons occupy apartments below the sidewalk. To allow even this number to sleep in damp cellars, to breed fevers and other diseases, to destroy their own lives, and to spread contagion in the neighboring community, is wrong and impolitic. When the Board of Health can make the owners of tenements responsible for the use to which their property is devoted; make them responsible for its sanitary condition, as that property is now responsible by law for the opening of streets and construction of sewers, then it will be possible to enforce such restraints as will bring relief in this important particular. "Man's inhumanity to man" is nowhere more observable than in this sacrifice of human life for the sake of gain. The ties of nationality and of kindred are insufficient to restrain these men from this unjust pursuit, and to obtain the largest possible weekly rent from the smallest enclosed space is their chief accomplishment. This class of sub-landlords are the oppressors of the poor, and a curse to society, whose sanitary laws they disregard and defy. The population of over-crowded tenements and cellars soon lose those traits of character which usually restrain the sexes in their social relations, and it is not uncommon to see all ages and sexes crowded together in the most disgusting proximity. From moral, as well as sanitary considerations, this whole system must be reformed, or the result will be most disastrous to our social and domestic institutions.

STABLE MANURE.

One of the first acts of this Board after its organization was the removal of the vast accumulations of manure (estimated at one hundred and sixty thousand tons) which occupied almost every vacant lot near the North and East rivers. The practice had long

prevailed of storing upon these sunken and vacant lots, not only the stable manure, but the manure from slaughter-houses, which included much of the animal matter of those establishments. When these accumulations were disturbed (as they frequently were) in their preparation for agricultural purposes, the offensive gases arising therefrom were unendurable. The whole upper part of New York island was more or less afflicted by this nuisance, and passengers arriving from the country by railroad were positively nauseated by the offensive and disgusting odors.

An order was issued that no manure thereafter be stored or allowed to remain within the city limits, and although considerable inconvenience was experienced for several weeks by the owners of stables and by dealers in manure, all parties now concede the advantages resulting from the immediate and regular removal from the city of this offensive material. Real estate, which was depressed in value by its proximity to these stable accumulations, has rapidly advanced, and the city treasury will be benefited by the increased value of taxable property and by the improvements already in contemplation.

STREETS, SIDEWALKS AND PIERS.

By the act creating the Metropolitan Board of Health, the obstructions upon the public streets, sidewalks and piers, seem to be placed under the control of this Board. This power is certainly conferred if such obstructions are at all dangerous to life or detrimental to health. But this Board has avoided the exercise of authority in doubtful cases, or when the power has been claimed by other departments of the city government.

Your attention is respectfully called to this subject with the hope that exclusive and undoubted power in respect to obstructions upon the streets, sidewalks and piers may be conferred upon a single department of the government. The practice which prevailed until recently of granting permits by joint resolution of the common council, was found to be so expensive that the system was abandoned. At the present time the street department grants permits to builders and contractors to occupy the streets; the mayor grants permits for shopkeepers and hucksters to occupy the sidewalks; and the corporation attorney prosecutes for violation of the city ordinances in respect to obstructions. The result is that citizens are uninformed as to their duties, and are very fre-

quently fined for offences which their neighbors commit daily and hourly with impunity.

This discrimination in granting permits is in all respects objectionable. To occupy and obstruct the sidewalks under the present system, the consent of the tenant or owner of the adjoining property must be obtained, and the approval of the alderman or councilman of the district. The mayor then grants the applicant a permit to occupy the sidewalk under certain limitations.

There are serious objections to this system of permits, *First*: These favors are liable to fall into the hands of personal or political friends. *Secondly*: The rights of the public are entirely ignored. The streets and the sidewalks belong to the public to the extent that all citizens are entitled to the "right of way," and no act of the common council, or of any official, should allow private interests to deprive them of this right.

The obstruction of the streets through permits granted by the street department, is also a subject of great importance. Great abuses have grown up and are permitted to continue under the present system. Large piles of brick, stone and lumber are allowed to obstruct a street for months and even years; the trade and commerce of the city is embarrassed by the delay of the carts and trucks of merchants and manufacturers; and the lives of pedestrians are often endangered. In some sections of the city, lumber dealers and owners of marble and stone yards are permitted to occupy both the streets and sidewalks adjacent to their premises. The machine and boiler-makers often perform their work in the open streets and avenues. The result is that adjacent property is often rendered uninhabitable, and all real estate in the vicinity is disastrously affected by these encroachments.

The obstructions upon the piers and heads of slips are popularly supposed to be within the jurisdiction of the street department, although the act creating the Metropolitan Board of Health, evidently contemplates that this board should exercise the necessary power in removing all encumbrances from the piers and providing for their proper sanitary condition. By the contract for cleaning the streets, it is the duty of the contractors to sweep and thoroughly clean the piers and bulkheads, at least, once in each week, and the president of this board is, in part, responsible for the faithful execution of this contract. Frequent complaints have been received during the present year in respect to the filthy condition of the piers, and the street-cleaning contractors have justly claimed that

it was impossible for them to effectually perform their work, on account of the obstructions and encumbrances for which they were not responsible. An inspection of the fifty-four piers situated between the Battery and Corlaer's Hock, East river, being about one-third of the water front of the city of New York, shows obstructions and encumbrances, as follows, viz.:

Offices and sheds, aggregate number.....	94
Oysters, fish, fruit, cake, and eating stands.....	28
Anchors, cannon, boilers, iron, tanks, tar kettles.....	109
Hogsheads, barrels and casks.....	59
Chains, cables, and windlasses (places).....	16
Carts, sleighs, trucks, railroad cars (aggregate number).....	26
Platforms and scales.....	5
Timber, spars, old iron, brick, rope, sails, junk (places).....	61
Iron pipe, stone, Belgian pavement.....	7
Wooden tanks, boxes, wheel-tirers.....	9
Boats (aggregate number).....	12

Notices of these obstructions and encumbrances were sent to the street department with a request that they be removed, but with some unimportant exceptions no attention has been paid to the subject.

The streets, sidewalks, and piers, are so important a part of the Metropolitan Sanitary District, and their proper control and management is so absolutely necessary to the good order, commercial prosperity, and sanitary condition of the district, that this subject demands immediate legislative action.

SEWERS AND PAVEMENTS.

The direct influence and sanitary importance of repairing the old and increasing the number of new sewers, cannot be over-estimated. The improved methods of heating and draining dwellings, contemplate sewer connections; and without such sewers and connections convenient houses, with the modern improvements, cannot be constructed. Independent of the general sanitary importance of this subject, economical considerations should induce the citizens of New York and Brooklyn to urge forward the present admirable system of sewerage. Owners of whole blocks of ground are waiting the construction of sewers to erect buildings that will add greatly to the taxable value of the property of the district, while others have commenced these structures with the full expectation that before their buildings are ready for occupation these sewers will be ready to receive the house-drainage.

It is unreasonable to expect thoroughly clean and well regulated streets, so long as the present cobble stone pavement is in use. Hoping and expecting that this pavement will soon be replaced by the "Belgian," little attention is paid to its thorough repair. The facilities for furnishing the stone blocks are now so ample, that it is believed that every street now requiring it could be paved in three years from this date. In the opinion of this board, both for sanitary and economic reasons, all the streets and avenues of the cities of New York and Brooklyn should be thus paved at the earliest day possible.

THE NIGHT-SOIL AND OTHER CONTRACTS.

Three contracts were made by the late city inspector for a period of ten years, which have been a source of great trouble to this board. The first is with Thomas Andrews, for the removal in boats from certain docks, not exceeding four in number, all the night-soil there delivered, and for this service he receives the sum of \$25,000 per annum. The second contract is with Daniel Gallagher, to deliver to him at Lodi, in New Jersey, all the night-soil in the city of New York; and for this service and delivery the city receives \$4,000 per annum. These two contracts are substantially with the same party, for the name of "Daniel Gallagher" is only used by Andrews to conceal the fact that he receives \$25,000 for a service for which in turn he pays only \$4,000. The object of the second contract is to secure a monopoly of the entire contents of the privies and sinks of the city. If the city was not compelled by this contract to deliver all its night-soils at Lodi, that part of this material which is not carried off through the street-sewers might be thrown from the ends of the piers into the waters of the East and North rivers, as has been done without inconvenience from time immemorial.

By these contracts, the city loses \$21,000 per annum, for ten years; but this is only a small portion of the actual loss to the people. The city has a water frontage of about twenty miles; the night-soil must be delivered at one of the four piers designated; the amount of cartage is thereby necessarily increased, and the charges of scavengers is consequently, at least one dollar and a half more per load than before the existence of these contracts. About 60,000 loads of night-soil are removed yearly from New York, and the unnecessary tax for this service, of \$1.50 per load, amounts to \$90,000 per annum. As all first-class houses are con-

nected with the sewers, this unjust and onerous burthen falls upon tenants of the poorer class. The prices which the scavengers have been obliged to charge, by reason of the long distances and delays in cartage, have subjected this Board to considerable unjust censure; but during the existence of these contracts the people can expect no relief. The piers selected for the delivery of night-soil are, by the terms of the contract, permanently assigned for that purpose. The residents in streets leading to these particular piers are greatly annoyed at night by the noise and odor which necessarily result from this business, and the value of real estate is seriously affected in these locations. This annoyance to the people and injury to their property are the more to be regretted, from the fact that they are really unnecessary. The remedy for the evils and wrongs complained of, would be simple in the absence of these contracts. The night scavengers should be compelled to cart the contents of the sink, after having been deodorized, in perfectly tight boxes, to the end of the nearest pier, and to discharge their loads through properly constructed hose or tubes into the waters of the East or North river.

The third of the contracts referred to is with the "Long Island Bone Laboratory Company," for the removal of offal and dead animals from the city at fifteen thousand dollars per annum. With slaughter-houses and bone and fat-boiling establishments located in all parts of the city, it is necessary that a uniform and efficient arrangement should be made, and a particular pier assigned for the reception and removal of these animal substances. But there is no reason that the city should pay fifteen thousand dollars per annum for this service, when responsible parties are willing to perform it without compensation, and to pay a handsome sum for the privilege. The counsel of this Board has given an opinion that this contract is illegal and void. A more perfect and a more economical system for the removal and utilizing of animal substances should be inaugurated; but in the presence of an impending pestilence, and of various duties of vital importance, this Board has not yet considered it wise or politic to interfere with the existing contract.

The expense to the treasury of the city, and the loss and damage to its citizens indirectly, by these three contracts, cannot be estimated at less than one million and a half dollars, for the period of ten years. The annoyance and the injury in a sanitary point of view, to the community, cannot be estimated in dollars and cents.

The city of Brooklyn also suffers by the injudicious contracts of its common council, and the faithlessness of its contractors. The contract for the removal of offal and dead animals was awarded to Francis Swift, and is dated April 6, 1866. By the terms thereof, three suitable docks were to be provided—two in the “western district,” and one in the “eastern district”—where all dead animals, butchers’ offal and garbage, were to be carried. He was at all times to have suitable boats or vessels at said docks into which he was to receive all dead animals, offal and garbage, and without delay remove and transport the same to some suitable place, not less than fifteen miles by water carriage, from the city of Brooklyn. He was also, “with suitable disinfectant materials, completely to disinfect and deodorize all such articles, vessels, carts, or other vehicles or docks, so that the same should not emit any noxious, offensive, or unhealthy odors, &c., &c. He was also to provide all necessary managers, workmen and agents, to enable him to perform the terms of said contract with promptness; and, upon receiving notice for the removal of dead animals, was to attend to said complaints within six hours from the time aforesaid.”

The history of the execution of this contract is one of gross neglect. One single dock was provided; and that one, in the Eastern District (Williamsburgh), at the foot of North Sixth street. There was no provision made for the Western District (city of Brooklyn), the contract specifying that there should be two, to be furnished by the contractor. This dock, at the foot of North Sixth street, was kept in the most filthy condition, and was a most offensive nuisance to the surrounding population. Deodorization or disinfection of the premises, as demanded specifically in the contract, was entirely neglected. Complaints by citizens and by inspectors were frequently presented to the Board, and finally an injunction was temporarily obtained against the contractor in order to effectually abolish so scandalous a nuisance. Dead animals were allowed to remain in the public streets for days, festering and decomposing beneath a summer sun; and their removal to the dock was the opportunity for a greater and longer exposure. The common council, having full power to annul the contract, has, by its silence, protected this creature of its own production.

By a resolution of the board of aldermen, passed June 19, 1865, and finally adopted December 11, 1865, Francis Swift & Co. were “licensed” and empowered to be, and act as “scavengers in and

for the city of Brooklyn, to remove night-soil therein and therefrom, for the term of ten years from the date thereof, according to the provisions of certain specifications reported to the common council of the city of Brooklyn by the health officer, and set forth in the minutes of that body, June 19, 1865." Swift & Co. were "required to provide at least four barges or floats, to be approved by the health officer, and to have, every night in the year, one barge or float at four different docks or places—which docks or places they were to provide without cost to the city," &c., &c. But two docks have been procured, one at the foot of Clinton avenue, and the other at the foot of North Fifth street, Eastern District.

In consequence of the failure to provide additional docks, the wants of the citizens living in the southern part of the city were constantly neglected. The vaults in near proximity to the docks were selected by the scavengers, to the injury of remoter sections, and when they visited the more southerly sections the contents of privies were carted through the finest portions of the city, some two and a half miles, to the nearest dock. They were also required to remove the night-soil in boxes, casks, or vessels, to be closely covered and kept tight, and to receive, retain and transport them at least six hundred yards from any shore, dock, or other place or boundary line of the city of Brooklyn. The parties failed to furnish either "boxes, tubs or casks." The night-soil was conveyed in ordinary carts used for this purpose, and dumped either into the vessels lying at either of the two docks, or by ingenious contrivance carried over the sides of the vessels, directly into the river. Numerous complaints as to such proceedings have been received by the board, and upon special investigation ample testimony has been accumulated to substantiate the charges. The specifications of the contract have been grossly violated, and in no department of its labors has the efforts of this board, to abate the most glaring nuisances, been more completely crippled. To the courts for abrogation of this contract, and to the intelligent and prompt interference of the Legislature, we can only look for relief.

In January, 1866, contracts for cleaning the streets of seven of the twenty wards of the city of Brooklyn, were awarded as follows:

1st Ward—contract made with Charles Rourke for..	\$1,950 00
8th Ward—contract made with Patrick O'Hara for..	620 00
9th Ward—contract made with Pat. Dunnegan for..	1,300 00
11th Ward—contract made with Thos. Sheppard for..	1,900 00
12th Ward—contract made with Wm. Helcher for...	594 00
16th Ward—contract made with Jacob Slank for	2,385 00
20th Ward—contract made with Thos. Sheppard for..	2,200 00

One needs but to look at the sums in the Eighth and Twelfth Wards, (in which two wards the cholera found the largest number of victims during the past summer), for which the parties contracted to perform certain duties, to understand that such contracts could not have been made in good faith. In the remaining thirteen wards no contracts were made, although the common council was repeatedly urged to the performance of this duty by the mayor. General dissatisfaction prevailed in the community, and the attention of the common council was frequently called by official action of this board to the condition of the streets and to the necessity of making prompt provision for their thorough cleaning. In the meantime cholera had traversed the ocean, and was quarantined at the entrance of our harbor. The common council at last adopted a resolution permitting each alderman to supervise the cleaning of his own ward, and to expend for the purpose such sums of money as were appropriated under the contracts for the previous year. The working of such a system was without order or method. The work was performed by the employees in accordance with their own will or caprice; ashes and garbage were removed at their pleasure, and frequently only by payment of extra fees by the citizens. In some of the wards the swill was carried away, but in most, it was removed by the street scavengers as food for their swine, who thus provided for the abatement of one nuisance by the creation of another. In a number of the wards, the sums appropriated by resolution for the use of the aldermen during the current year, were expended in some half a dozen weeks.

In the month of September an additional sum of fifteen thousand dollars (\$15,000) was voted by resolution of the common council for the purpose of cleaning the streets. Most of this money was apportioned to the respective wards to meet deficiencies already incurred. The meagre provision having been exhausted, many portions of the city were turned over to the Board of Health, for such provisions as it could make for their urgencies and necessities under its "extraordinary powers."

THE GAS NUISANCE.

For many years the gas works of this city have been the subject of frequent and urgent complaint. They filled the streets with odors so offensive as to cause sickness in many families, and people in the vicinity were obliged to keep their windows closed or were compelled to remove to other parts of the city. On the 24th of April, Dr. E. H. Janes, sanitary inspector, reported to this board as follows:

"I, Edward H. Janes, sanitary inspector in the Metropolitan Sanitary District, of the State of New York, do report, that on the 3d day of April, 1866, I did inspect carefully, and personally examine the gas works situated at the foot of East Fourteenth street, in the city of New York, and found the facts to be as follows: The offensive odor of which our citizens complain arises from the impurities which are the result of passing the gas through hydrate of lime in the process of purifying. These impurities consist of sulphuretted hydrogen and ammonia in combination with carbonic, muriatic, sulphuric and sulphurous acids. Before the purifiers are opened, these offensive and volatile matters, escaping from the spent lime, are forced through a horizontal tube, with which the purifiers are connected, into the shaft of a high chimney at some distance from the works, and thus escape into the atmosphere by which they are often so diluted and diffused as to cause but little or no inconvenience. In certain conditions of the barometer however, the gases, instead of being diluted and dispersed, will fall to the lower atmosphere and be inhaled, to the sacrifice of comfort, and, in my opinion, to the detriment of health. All attempts to get rid of these odors have thus far proved unsuccessful, and an effort to consume these gases was followed by an explosion which came near destroying the entire works. Probably much of this odor is due to the quality of the coal used for the last few years, for it is only during a comparatively late period that the odor has been so offensive.

"The president of the company informed me that since the commencement of the recent war it had been necessary to use whatever quality could be obtained, whereas, before the war, New Castle and Cannel coals, each containing but a small proportion of sulphur, were used, and that negotiations were now completed for obtaining coals of a better quality than those recently used, whereby it is thought that our citizens will be subjected to a less degree of annoyance. It is my opinion that the constant inhalation of an atmosphere impregnated with sulphuretted hydrogen is

detrimental to health; but I have no plan to suggest by which we can be relieved from the present annoyance, except the use of coals free from sulphur. I am authorized to say that Prof. Torrey, the chemist of the Manhattan company, or his able assistant, Mr. Schultz, 133 Fourth avenue, will confer with the Board, or its sanitary committee, if required, and make such further explanations as may be necessary."

The whole subject of this gas nuisance was referred to the sanitary committee. The gentlemen attached to the gas companies admitted the existence of the nuisance, and the report of Dr. Janes proved substantially correct. An earnest effort has been made to find a remedy.

On the 18th of May the sanitary committee reported to the board as follows: "The sanitary committee cannot, at present, make a final report on the gas nuisance; but, in order to maintain an interest in this subject, and to do justice to the gas companies, the committee desires to communicate the particulars of an interview with Mr. Roome, president, and Dr. Torrey, chemist of the Manhattan gas company." They objected to the statement of Dr. Stone at the last meeting of the board, that their gas produced a reddish-yellow light, owing to its being made of inferior coal, and asserted that they made a gas purer than that made in London. So much reliance is placed upon the experience and veracity of these gentlemen, that we would not be willing to prejudice the public against them on this point; yet we are led to believe, by the authorities consulted, that Cannel coal, or the coals most free of sulphur, make the best gas. They also objected to the proposition, "to appeal to the Legislature to take away their charter and give it to some company who would agree to make gas out of coal of a certain quality, and thus obviate the nuisances complained of," as injurious and unjust, as they could not see how any new company could do better than they were doing. They were anxious to conduct their operations without giving offence, and had tried, and would continue to try, to render their works inoffensive, and they only wished that their success had been as great as their efforts. They were still willing to try any experiment that promised success. It was stated by the committee that the gas-houses were a nuisance long complained of, and that they were believed by the public to be indifferent to complaints in the past, and would continue to be so for the future; that the public looked to the board of health for a remedy; that the safety of the city

required that the streets should be lighted, and on this account we could not close their works; that a mere fine would not be likely to remedy the matter, and since we were not wise enough to suggest the means by which the gas manufacture could be inoffensively conducted, and since it did not come within our province to decide what these means should be, we were compelled, as a remedy, to suggest that an application should be made to the Legislature to take away their charter. They remonstrated against the charge of being indifferent to the public comfort, and would use every means to remove objections. The experiment proposed to be made by Dr. Torrey had failed of success, and they had made several unsuccessful experiments besides. Mr. Roome stated that he had written to London to inquire what had been done there, and if he could obtain any new suggestions, from any source, which were at all reasonable, they would willingly make use of them. It was asked, "why they could not offer a reward of five or ten thousand dollars to the public for a remedy, as such an announcement would stimulate experiments, and would satisfy the public of their sincerity in seeking for a remedy?" The reply of Mr. Roome was that "he would willingly give this sum for any means that should prove to be successful." It was asked, "if the gases could not be sent through tubes of very small calibre, and then through water eight or ten feet deep, using wire gauze as an additional security, and be burned?" Dr. Torrey answered that even then he should fear explosion. It was then suggested, "to saturate the lime purifiers only to two-thirds of their capacity."

Dr. Torrey thought that their removal would then be necessarily more frequent, and although each purifier might emit a diminished quantity of gas, it would not make any difference in the quantity of sulphurous gas that would escape. It was asked whether a tall chimney over the purifying room (since "fanning" of the gases into the chimney on the pier had failed to answer the purpose), would not carry away the offensive gasses? Mr. Roome replied, that "if he thought so he would willingly build one two hundred feet high." "The good faith of these gentlemen is not to be questioned, and the committee believe they are honestly seeking for a remedy, and are much embarrassed to know what means to use. The fact remains that the nuisance, although forbidden by article 146 of the code of health ordinances, is yet unabated. Trusting in the high character of the gentlemen who manage the gas companies, we ask for public patience, in hopes that the efforts

being made to remedy the evils complained of may meet with full success; and would invite all who have any propositions to make for the removal of this nuisance, to send them to the board of health." The valuable testimony upon this subject, taken by the sanitary committee at a public meeting held for that purpose, may be found in the appendix, schedule "L."

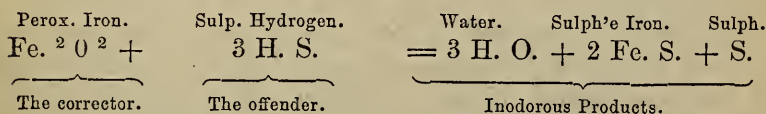
Prof. Samuel St. John having been requested to suggest a remedy for the gas nuisance, replied as follows:

COLLEGE OF PHYSICIANS AND SURGEONS, }
NEW YORK, May 22, 1866. }

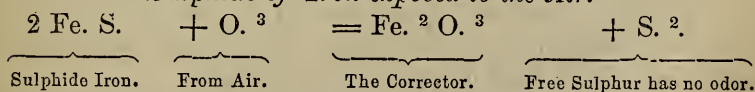
DRS. JOHN O. STONE, WILLARD PARKER, JAMES CRANE, *Sanitary Committee*:

Gentlemen.—To your question "Can coal gas be divested of its offensive odor, which makes its production, at the gas houses, a nuisance?" I reply, that several substances are known to chemists, endowed with the power of decomposing sulphuretted hydrogen, thereby annihilating its offensiveness. Such are chlorine, iodine, bromine, peroxide of iron, alkaline permanganates, &c. Difficulties, doubtless, attend the process of separating this gas at the gas works which the chemist does not ordinarily encounter in his manipulations in his laboratory. We learn, however, from English chemistry, that the peroxide of iron is largely used for this purification in England. The resulting products, water and sulphide of iron, are odorless. The sulphide of iron is converted again by the air into peroxide and may be used for many months for purification. Whether the process succeeds in removing all the offensive gas I am not informed, but I infer from its extensive use that it is in a good degree successful.

Respectfully yours,
SAMUEL ST. JOHN.



Sulphide of Iron exposed to the Air.



The views of Dr. St. John were communicated to the Manhattan gas company, and it was decided to obtain a sufficient quantity of the "peroxide of iron" for the purpose; but it was finally resolved

to make the building on the pier (attached to which is the chimney sixty feet high) a "purifier," by filling it with hydrated lime to absorb all the gases not taken up by the boxes in the purifying room. This experiment, in fact, amounted to increasing the number of the purifiers. Lime was used by Professor Torrey in preference to the peroxide of iron, because it was supposed to be better suited for the absorption of certain of the gases.

The experiment proved so great a success that the company has, at considerable expense, enlarged the building on the pier and made it one large "purifier." It has, also, constructed an iron cylinder through which the gases are passed and washed before passing into the lime. The Manhattan company believes that it has been successful. For four months there have been no complaints, except on one occasion in the month of August. Upon visiting the gas house to inquire the cause, Mr. Smith, the superintendent, stated that the charge was true, but was caused by an accidental obstruction of one of the purifying boxes, which would be guarded against in future.

As the season advances and a larger quantity of gas is made, it will be possible to speak positively as to the result of this experiment. But it is already ascertained that these gases can be absorbed, and this fact being established, it is only necessary when gas is generated in large quantities to increase the size and capacity of the purifiers.

Whether lime or peroxide of iron, or a combination of the two is best suited to absorb these gases cannot be positively stated at present. The proper washing of the gas, in addition to the lime and iron, would probably meet all the "indications." But the sanitary committee continues to believe that the best way of disposing of these offensive gases would be to burn them, and that some simple and safe method of doing so may be discovered.

In some of the capitals of Europe, the gas works have been removed to a great distance on account of their offensiveness, and the fears entertained of their explosion. It is possible that the city of New York may be forced to the same conclusion, and if these offensive gases are generated by the use of coal which abounds in sulphur, then Newcastle, Cannel, and other superior qualities should be used by the gas companies.

A fine light is produced by the distillation of petroleum, and the gas is free from disgusting odors, but it probably could not be used with economy in a large city.

"Peat" gas is said to be inodorous and purer than coal gas, and experiments are now being made to demonstrate its superiority.

In investigating the "gas nuisance," the attention of this Board has been confined to the "Manhattan" company. Other companies will be required to adopt similar measures for the relief of our city.

IMPENDING PESTILENCE.

The prevalence of cholera in various parts of Europe, and the almost absolute certainty of its appearance in this country during the year 1866, stimulated this board to great activity immediately upon its organization, to prepare the Metropolitan District for the arrival of the epidemic. By section 16 of chapter 74 of the Laws of 1866, it is the duty of this board, in the presence of great and imminent peril to the public health by reason of impending pestilence, to take such measures, and to do and order and cause to be done such acts, and make such expenditures not otherwise provided for, or authorized by the law, as it may declare that the public safety and health demand and the Governor of this State, in writing, shall approve.

On the 10th of April, the sanitary committee was directed to report without delay "the evidence there is of great and imminent danger to the public health by reason of impending pestilence" and to recommend the acts and measures necessary for the public health and safety. On the 13th of April, the committee presented the following report:

"A very brief period has elapsed since the organization of the Metropolitan Board of Health, and although it has labored earnestly to abate all nuisances, its limited power will not enable it to remove the accumulated filth of months and years before the arrival of summer, nor to satisfy in other respects the reasonable expectations of the public.

"The 'Atlanta' arrived last November with the cholera from Southampton, and between the 22d of November and the 20th of December, there were twenty-four deaths on Ward's Island, at one particular hospital, in which the disease attacked the convalescents with fever. Owing to the coldness of the weather the disease did not extend, and many were led to believe that this feeble attack was an evidence of its weakness, but none are now so sanguine or hopeful. Cholera is already in Halifax, brought thither by the steamer 'England,' containing one hundred and sixty cases of the disease, exclusive of the forty who died on the voyage from Liverpool. Information is received to-day from the

State department at Washington, that the British brig 'Ughla,' and the bark 'Hampton' had reached Bermuda with cargoes of rags, and were quarantined on suspicion of cholera. These vessels will soon reach New York, and others will undoubtedly arrive with the disease on board. At quarantine there is only one hulk which can accommodate about three hundred persons, and there is no place where sick passengers can be landed and properly cared for. It is necessary that the powers of this board should be increased to meet an emergency in case of pestilence.

"There is no reason to believe that the present threatening epidemic will differ from the four previous ones. In the summer and autumn of 1831, the cholera appeared on the western and northern coasts of England, and reached New York in the following summer. On the 5th of July, 1832, twenty-one cases were reported from different parts of this city. In the summer of 1848, it appeared in the same place in England, and then spread along the southern shores and northwardly to Scotland. On the 2d of December, 1848, it was brought by the ship 'New York' to this port, the vessel losing seven cases during the last week of the voyage. During the following summer the epidemic prevailed in this city. The history of its march through western Europe and the southern parts of England in 1865, has been the same as at other periods, and is followed by the arrival of the 'Atlanta' in the city, in December. It has generally attacked America during the year following its ravages in Europe, and it is probable that the epidemic will pursue the same course during the present year.

"Cholera, then, is imminent and the great cities of New York and Brooklyn, which have such a free communication with each other and with all the world, cannot fail to be exposed to its earliest attacks. It seems destined to come and occupy its previous haunts, where filth and the neglect of all sanitary precautions will develop and disseminate its virulence.

"In view, then, of this great danger which threatens to destroy thousands of lives and injure the commerce of the district to the extent of millions of dollars, your committee would recommend that an appeal be made to the Governor of the State to proclaim to the public the danger of an impending pestilence, and authorize this board to take such means and incur such increased expenditures as shall be necessary to accommodate the sick in the district as well as those who arrive at quarantine, to clean the streets, remove the manure heaps, correct the ventilation, drainage, and

over-crowding of dwellings, to close or remove all buildings which are dangerous to life or health, empty and remove the contents of privies and cesspools, re-open obstructed sewers, wash out the gutters and sewers with water, in fact, do all that is required to resist pestilence and protect human life. And your committee would also recommend that the Governor of the State be requested to extend this increased power to the board to the 15th of October.

“WILLARD PARKER, M. D.

“JOHN O. STONE, M. D.

“JAMES CRANE, M. D.

Sanitary Committee.

“NEW YORK, April 13, 1866.”

The statement contained in the above report, as to the existence of cholera at Ward's Island in November and December, 1865, having been publicly denied, the sanitary committee substantiated it by the facts contained in a report to the board. (Appendix, Schedule M.)

On the 13th of April, the board adopted the resolutions necessary to secure extraordinary powers during the impending pestilence, which were promptly approved by the Governor of the State, and made public.

On the 4th of May, the board adopted additional resolutions for the purpose of securing the undisputed power to establish and support suitable buildings for the detention and accommodation of persons recently coming from vessels, on which there had been any case of cholera, ship-fever, typhus-fever, or other contagious disease, and to support such persons while so detained; also to remove the “cellar population” to other dwelling and lodging places for such period as the board may deem necessary to the public health. These resolutions were also approved by the Governor, and published. On the 10th of October, the “extraordinary” powers of the Board were extended, by proclamation, from October 15th to December 1st. Circulars were published for the information of the public (see Appendix, Schedule N), and thirty thousand copies of each were circulated, through the sanitary inspectors and the Metropolitan Police, in all parts of the district, more particularly among those most liable, from their habits and condition in life, to be attacked by the disease.

The following are the proclamations above referred to:

[Assem. No. 241.]

PROCLAMATION *by the Governor of the State of New York, and
the Metropolitan Board of Health.*

STATE OF NEW YORK, EXECUTIVE DEPARTMENT, }
ALBANY, April 21, 1866. }

The Metropolitan Board of Health, at a regular meeting thereof, held in the city of New York, on the thirteenth day of April, 1866, adopted the following resolutions:

Resolved, That, in the judgment of this board, and in fact, there is the presence of great and imminent peril to the public health in the Metropolitan Sanitary District of the State of New York (created by Chapter seventy-four of the Session Laws of said State, passed February 26, A. D., 1866), by reason of impending pestilence within the meaning of the provision in relation thereto, contained in section sixteen of said act, and the said board does now and in good faith, hereby declare that the public safety and health demand that for the preservation of the public health, the said board should take the measures and do and order and cause to be done the acts, and make the expenditures (so far as this board may find needful about said acts and measures) hereinafter specified, that is to say:

Resolved, That the measures to be taken, the acts to be done or caused to be done, and expenditures to be made by this board in the discharge of its duty by reason of such peril (so far as they can be specified), are the following:

1. Gathering and removing in and from built-up portions of the district to some proper place, what, if left, might, in the opinion of this board, tend to develop or increase the cholera this year.

2. Cleaning, purifying and disinfecting any buildings, erections, grounds, streets, and sewers, drains, or places within this district, and closing any buildings or erections, which, if not so treated, might, in the opinion of the board, tend to develop or increase the cholera this year.

3. Cause improved drainage and ventilation when it can be readily done in the built-up portions of the district, or connected therewith in any particular, in respect of which the condition of things, if left unchanged, might, in the opinion of the board, tend to develop or increase the cholera this year.

Provide for the removal, accommodation, care and treatment of those who may this year be attacked by, or sick of the cholera, or any contagious disease, and for the interment of those who may die, as the board may find or declare needful.

5. Make and enforce, and cause to be enforced, such regulations and orders, for preventing the spread of the cholera this year, as the board may find needful to make.

6. Exercise any powers heretofore given to any health authority or officer, applicable to cases of pestilence or contagious diseases in this district, as the board may find or declare needful.

7. Use the proper means and agencies for the prompt and efficient exercise of the foregoing powers, and what is incident thereto, in such a manner as the public peril, in the opinion of this board, may render needful to guard the public health in respect of the cholera.

8. Make such expenditures, incur such pecuniary obligations, and borrow such money, about any measures and matter aforesaid, as this board may find or declare needful.

Pursuant to the provisions of the sixteenth section of the seventy-fourth chapter of the New York Session Laws of 1866, this board hereby declares and makes proclamation that the peril to public health, in said section mentioned, exists, and declare the same to continue until the fifteenth day of October next.

(Signed) JACKSON S. SCHULTZ,
JAMES CRANE,
WILLARD PARKER,
JOHN O. STONE,
THOMAS C. ACTON,
JOHN G. BERGEN,
J. S. BOSWORTH,
BENJAMIN F. MANIERRE.

Having duly and fully considered the foregoing resolutions, et cetera, I do hereby, by virtue of the authority contained in section sixteen of the act therein mentioned, approve of the said Metropolitan Board of Health taking the several measures and doing, ordering, and causing to be done, the several acts therein specified, and making the expenditures and incurring the obligations necessary and proper to carry into effect and execute the several measures, and to do, and cause to be done, the said several acts; and I do hereby unite with said Board in making the aforesaid declaration.

R. E. FENTON.

PROCLAMATION *by the Governor of the State of New York and the
Metropolitan Board of Health.*

STATE OF NEW YORK, EXECUTIVE DEPARTMENT, }
ALBANY, May 14, 1866. }

The Metropolitan Board of Health, at a regular meeting thereof, held in the city of New York, on the fourth day of May, 1866, adopted the following resolutions:

Resolved, That, in the judgment of this Board, and in fact, there is the presence of great and imminent peril to the public health in the Metropolitan Sanitary district of the State of New York (created by chapter seventy-four of the Session Laws of said State, passed February 26, 1866), by reason of impending pestilence within the meaning of the provision in relation thereto, contained in section sixteen of the said act, and the said Board does now, and in good faith, hereby declare that the public safety and health demand, that for the preservation of the public health, the said Board should take the measures, and do and order, and cause to be done, the acts, and make the expenditures (so far as the Board may find needful about said acts and measures) hereinafter specified, in addition to those specified by the resolutions of this Board, passed on the 13th day of April last, that is to say:

Resolved, That the measures to be taken, the acts to be done or caused to be done, and expenditure to be made by this Board in the discharge of its duty by reason of such peril, in addition to those specified in said resolutions of April 13th, are the following, so far as they can be specified:

1. The establishment and support of suitable buildings for the detention and accommodation of persons recently coming from vessels on which there has been any case of cholera, ship fever, typhus fever, or other contagious disease, and to support such persons at such establishments, during such period as to this Board may seem necessary for the protection of the public health.

2. The removal from cellars of all persons who make such cellars their place of dwelling or lodging, and the furnishing of such persons when so removed with other dwelling or lodging places for such period as this Board may deem necessary for the public health.

3. Using the proper means and agencies for the prompt and efficient exercise of the foregoing powers, and what is incident thereto, in such manner as the public peril, in the opinion of this Board, may render needful to guard the public health in respect

of the cholera, ship fever, typhus fever, or other contagious disease.

4. Making such expenditures, incurring such pecuniary obligations, and borrowing such money about any measures and matter aforesaid, as the Board may find or declare needful.

(Signed) JACKSON S. SHULTZ,
JAMES CRANE, M. D.,
WILLARD PARKER, M. D.,
JOHN O. STONE, M. D.,
THOMAS C. ACTON,
BENJ. F. MANIERRE,
JOHN G. BERGEN.

Having duly considered the foregoing proceedings of the Board of Health, I do hereby, by virtue of the authority contained in section sixteen of the act therein mentioned, approve of sub-division one of the foregoing resolutions, the authority so far as applicable to be exercised in accordance with the provisions of section 47, of chapter 358 of the Laws of 1863.

I also approve of sub-division two of said resolutions.

I also approve of sub-division three of said resolutions.

I also approve of sub-division four of said resolutions to the extent only, and to the end that said Board may make such expenditures and incur such pecuniary obligations as may be needful for the purposes above specified.

R. E. FENTON.

CHOLERA AT QUARANTINE.

Since the destruction in 1858 of the quarantine hospitals on Staten Island, it has been the practice to detain immigrant passengers on board the vessels in which they arrive, or is sick, to transfer them to the hospital hulk in the lower bay, or to Ward's Island. The necessity of facilities on shore by which the sick might be separated from the well, and all enjoy the benefits of fresh air and cleanliness, has been fully realized by all interested in the health and welfare of immigrants, and in the proper protection of the cities of this district from contagious disease. The Legislature of the State has, until recently, failed to authorize the necessary powers and expenditures to secure suitable accommodations; and the building to be erected on west bank for quarantine purposes will not be available until after another season.

When the cholera arrived at this port in April last, the vessels,

with their passengers, were anchored in the lower bay. Hulks, in sufficient number, could not be obtained; the well could not be separated from the sick, and being exposed to the contagion, many contracted the disease and died. The health officer and quarantine commissioners were without the power or means to secure a place on shore for their proper care and treatment; the passengers were mutinous; the officers were unable to enforce subordination, and it was feared that if vessels continued to arrive with cholera on board, the infected might escape by force to the shore and scatter the disease throughout the country. This Board was appealed to by the passengers, by their friends, by shipowners, and by the public generally, to make an effort for the relief of the well persons on board these vessels. Under the "extraordinary" powers conferred upon this Board by the proclamation of the Governor, it was hoped that some place on shore could be secured for the temporary relief and care of the sufferers. A joint committee, composed of members of the Quarantine and Emigration Commissions, and of this Board, was organized, and an application was made to the General Government for a portion of Sandy Hook. The application failed, Sandy Hook being beyond the limit of the State of New York, and having been sold to the General Government by the State of New Jersey for military purposes only. Bedloe's Island was also refused, it being needed by the government for the use of troops, and as a depot for army supplies. Barren Island was found to be unsuited to the purpose, on account of the shallow water in the vicinity, and from the fact that it was used as a place of deposit for dead animals. Coney Island was admirably adapted to the wants of the committee, but had been leased by the town of Gravesend, on condition that it should not be used for any quarantine purposes. Seguin's Point, on Staten Island, where the State of New York owns fifty acres of land, was finally selected and taken possession of, and a number of buildings adjacent were leased from the proprietor. While the necessary alterations and improvements were being made, a large force of Metropolitan Police and a United States revenue cutter guarded the premises against violence and incendiarism. The Supreme Court having granted an injunction forbidding this Board to use the premises for the purpose designed, the attempt to afford any additional aid or relief to those persons arriving upon cholera ships, was necessarily abandoned. Fortunately, the arrivals of infected vessels were, during the summer months, less numerous,

and the energy and activity of the health officer of the port and the quarantine commissioners, secured for the sick and well the best accommodations that circumstances would admit.

The case of the steamer "Helvetia," which arrived on the 8th of October, after a passage of twenty days, is an illustration of the suffering, sickness and death caused by the present inadequate Quarantine accommodations. During the voyage, eleven passengers had been lost, and on the day of arrival, a woman sickened and died of cholera. The weather was so stormy that the dead could not be buried, nor could the passengers be transferred to the hulks or hospital ship. The cholera increased, and in the course of eight days (from the 10th to the 18th) thirty persons died. With a proper place on shore, these passengers could have been removed, their lives would have been saved, and after a short detention and a thorough cleansing and disinfection of their persons and clothing, they could have been liberated without endangering the health of the country.

It is time that this great public necessity was met by appropriate legislation. Power to purchase such a site as is required, has already been given by the Legislature, but it has been so hampered with restrictions and limitations as to prove entirely useless. If the site cannot be acquired by purchase, authority should be given to take by right of eminent domain, whatever land may be necessary for that purpose; for, until this great want is supplied, neither the quarantine authorities nor this Board can afford that protection to the public health which might otherwise be secured.

It is the duty of this Board to acknowledge the efficient and cordial co-operation of the Commissioners of Quarantine and the Health Officer of the port in its efforts to protect the public health. Although possessing distinct and independent powers by statute, they have been zealous and hearty in their co-operation in all efforts to ward off the approach of disease. Wherever it seemed at all doubtful at what precise point their duties ended and those of the Board began, they have promptly waived all considerations except those relating to the public welfare, and have cheerfully united in concerting and carrying out whatever measures the emergency seemed to require. The Health Officer has never failed to keep this Board promptly advised of all the facts necessary to guide its judgment in providing against the spread of the dreaded pestilence.

The important question as to the length of time passengers of

infected ships should be detained in quarantine, received the early attention of the sanitary committee of this Board. The theory of Snow, Budd and Pettenkoffer, was adopted, that cholera was contagious through the evacuations, and if these were conveyed on shore in the soiled clothing, or on the dirty bodies of the passengers, the country could not escape the epidemic. The sanitary committee, acting upon the authority of Pettenkoffer, recommended a detention of twenty-one days, which period should be extended if diarrhoea prevailed among the passengers. The experience during the present year, as to the power of disinfectants, and general cleanliness, suggests a shorter period of detention, and there seems to be no reason why vessels, after being thoroughly disinfected, and after all passengers have been removed, should not be allowed to come at once to the city.

CHOLERA IN THE METROPOLITAN DISTRICT.

On the 18th of April, the steamer "Virginia," from Liverpool, arrived at Quarantine with the cholera on board, it having made its appearance on the 12th of that month among the steerage passengers. The first case in the city of New York was on the 1st of May, in a small tenement house on Third avenue, near Ninety-third street. The families were immediately removed to temporary quarters; the bedding and clothing were destroyed; the entire premises disinfected, and the cellar, which was partially filled with stagnant water, was drained. The second case was reported on the 2d of May, at No. 115 Mulberry street, and the third case on the 6th, at No. 32 West Thirty-ninth street. Similar measures were adopted in these cases for the destruction of all traces of the disease, and no more cholera was reported for nearly a month. Meantime, no effort was spared to improve the sanitary condition of the district, and to secure cleanliness among the people, and a proper care and attention to diet and general habits. The Battery Barracks were obtained from the Secretary of War, and the barracks at the Five Points, for hospital purposes, and Dr. Stephen Smith was appointed chief of hospitals. He was directed to organize a corps of medical men, for "house to house visitation;" to make arrangements for the enrolment, in the service of the Board, of the district physicians of the several dispensaries, and to select buildings for "refuges," to which families could be temporarily removed from infected dwellings. The plans and arrangements made by Dr. Smith were approved, but their adoption proved unnecessary by reason of the success which attended the liberal

and intelligent use of disinfectants, and the untiring efforts of the officers and employees of this Board.

A depot and laboratory for disinfectants was established at No. 308 Mulberry street, and a "disinfecting corps" was organized under the command of Lieut. James A. Chrystie, consisting of nine young and active men who had served in the army and navy of the United States during the great rebellion. They were on duty both day and night, with horses and wagons, ready to proceed to any place where a case of cholera should occur, and they performed their dangerous and disagreeable duties so promptly and faithfully that they deserve the public gratitude. For details in respect to their valuable services, and the methods used in disinfecting and fumigating clothing and dwellings, you are respectfully referred to the report of the Sanitary Superintendent. A part of the disinfecting corps is retained in the service of the Board, since the disappearance of cholera, for the proper cleansing and purifying of premises where cases of typhus and typhoid fevers and small pox may occur.

The cholera continued to prevail to a very moderate extent during the month of June, and increased in July; the number of cases in that month averaging five per day. From the 15th of August to the 15th of October, it gradually abated, and has since almost entirely disappeared. For the statistics in respect to the progress and extent of the disease, you are respectfully referred to the report of the Registrar of Vital Statistics.

On the 25th day of July, the battery barracks were opened for the reception of patients, as a cholera hospital, in charge of Dr. Thomas R. Pooley; and on the 27th of July, the "Red house," on Second avenue, near One Hundred and Sixth street, was occupied and opened as a hospital, in charge of Dr. Thomas H. White. For details in respect to the management of these hospitals, the treatment of the disease, &c., you are respectfully referred to the documents accompanying the report of the sanitary superintendent. The hospitals were closed about the first of October.

To the liberal use of disinfectants, the Metropolitan district is principally indebted for its comparative exemption from the epidemic, and the theory of Pettenkoffer and Budd, that cholera can be stamped out by their free and early application, is positively confirmed and established. The chemicals most frequently employed for this purpose have been sulphate of iron, the chlorides of lime and soda, permanganate of potash, sulphur for fumigation,

and carbolic acid. In the early part of the year, their relative value and their peculiarities were not perfectly understood, and the process of preparing, and manner of using them were somewhat experimental; but study and experience established their respective qualities, and gave system to their application. The sulphate of iron destroys the germ of cholera, and disinfects drains, privies, and other filthy places, which aid in the development of the choleraic poison. Its cheapness and uniform success places it at the head of all disinfectants. Chloride of lime has been successfully used in disinfecting filthy yards, cellars and streets. Permanganate of potash destroys the poison in clothing and bedding without materially injuring them. Carbolic acid has not been sufficiently used by the officers of this Board, as a disinfectant to fully establish its relative value, but it is regarded with favor. In cases where any dwelling or tenement has been invaded a second time by cholera, sulphur fumigations have been used with wonderful success. For the practical details upon this subject, the report of the sanitary superintendent is respectfully referred to.

The history of cholera in the city of Brooklyn, during the present season, has been much the same as in New York, and the means used to prevent the development of the disease have been similar and attended with similar results. The first case was reported on the 8th of July, and the disease prevailed, for a time, with considerable violence, especially in the twelfth ward. A hospital was opened at the corner of Hamilton avenue and Van Brunt street on the 22d of July, in charge of Dr. Wm. H. Thayer, and was closed on the 6th of September. A new hospital was built in City park, and opened on the 15th of August, in charge of Dr. W. F. Swalm, which was closed on the 1st of October, at which time the cholera had disappeared from the city. Thirty-six cases were reported at the county jail within a brief period; but the epidemic yielded immediately upon the removal of the prisoners to tents, to change in diet, and to disinfection and fumigation. For complete details in respect to the cholera in Brooklyn, you are respectfully referred to the report of the assistant sanitary superintendent, and accompanying documents.

During the season, several cases of cholera occurred in Port Chester, Morrisania, Mott Haven and Newtown, but prompt attention by the assistant inspectors at those places, and the aid of the disinfecting corps, were successful in preventing the spread of the disease.

LEGISLATIVE ACTION NECESSARY.

For suggestions as to further legislative action necessary for the better protection of life and health in this district, you are respectfully referred to the reports of the attorney and counsel, (appendix, schedule F).

EXPENDITURES.

Your attention is respectfully called to the annexed report of the treasurer of this Board, from which it appears that the total expended in the Metropolitan Sanitary District, for general and extraordinary expenses, from its organization in March to November 15, 1866, has been \$178,633.91. Of this sum \$17,791.24 was expended at Seguin's Point, for the purpose of providing proper quarters for well persons arriving at this port upon vessels on which cases of cholera and other contagious diseases had occurred. The amount of extraordinary expenses necessarily incurred in this district, in the presence of impending pestilence, and to prevent the development and spread of cholera, has been \$95,696.91, leaving the ordinary expenses of the Board, for a period of over eight months, only \$65,145.76. The strict economy with which the finances of the Board have been managed, is a fact which must gratify every tax-payer, and every citizen interested in the proper government of the cities of this district.

CONCLUSION.

It would be unjust to particularly notice in this report the services of any individual officer or employee of this Board, when all have been so faithful and devoted to the public interests. To Capt. Bowen G. Lord and his company of sanitary police, this Board is especially indebted for valuable assistance and hearty co-operation in its efforts for the preservation of the public health.

To the press, this Board is truly grateful for uniform and generous support, for its valuable aid in the dissemination of useful sanitary knowledge, and for its reliable and faithful daily reports upon the state of the public health. To its influence and judicious management must be attributed, to a great extent, the calmness of the public mind in presence of a dreaded epidemic, and the consequent preservation intact of the great commercial interests of the Metropolitan Sanitary District.

Respectfully submitted,

JACKSON S. SCHULTZ, *President.*

EMMONS CLARK, *Secretary.*

REPORT OF TREASURER.

To the Metropolitan Board of Health :

I have the honor to submit the enclosed detailed report of the receipts and disbursements of the board from the date of its organization, March, 1866, to November 15th, 1866, a period of eight months and a half, in compliance with section 19, chapter 74, Laws of 1866.

I beg to call your attention to the general summary of expenditures, as possessing peculiar interest from the fact that so small a sum has been spent by the board in the performance of its difficult, delicate and responsible duties.

Total sum expended in the district for general and
extraordinary expenses \$178,633 91

As follows :

General expenses \$33,289 94

General extraordinary expen-

ses 28,722 92
..... \$62,012 86

Expenses—New York Co... \$19,233 36

Extraordinary expenses—

New York county..... 58,709 82
..... 77,943 18

Expenses—Kings county... \$12,622 46

Extraordinary expenses—

Kings county..... 25,603 41
..... 38,225 87

Expenses outside New York and Kings

counties..... 452 00
..... \$178,633 91

A portion of general expenses and general extraordinary expenses is to be charged to the county of Kings.

Of the above amount, the sum of \$17,791.24 was expended in the effort to furnish temporary hospital accommodations at Seguin's

Point, to be used by well passengers only of ships in quarantine. This most humane and praiseworthy effort was frustrated by the action of the residents of Staten Island, who were promptly aided by the courts. A portion of this sum may be refunded to the board by the the commissioners of quarantine.

The sum of six thousand dollars was placed at the disposal of the board, in the city tax levy, for the purpose of cleaning those streets and avenues which were not included in the street-cleaning contract. Of this sum only \$2,451.75 has been spent, leaving a balance which will be ample for the same purpose for another season.

BENJ. F. MANIERRE,

Treasurer.

NEW YORK, Nov. 30, 1866.

RECEIPTS.

1866. *Temporary Loan Account.*

April 14.	By National Shoe & Leather Bank, funds advanced to pay checks	\$2,932 35
do 16.	By National Shoe & Leather Bank, funds advanced to pay checks	65 00
do 24.	By National Shoe & Leather Bank, funds advanced to pay checks	2,759 35
do 25.	By National Shoe & Leather Bank, funds advanced to pay checks	27 50
do 30.	By National Shoe & Leather Bank, funds advanced to pay checks	7,522 98
May 4.	By National Shoe & Leather Bank, funds advanced to pay checks	573 64
do 11.	By National Shoe & Leather Bank, funds advanced to pay checks	16 75
do 14.	By National Shoe & Leather Bank, funds advanced to pay checks	70 00
do 22.	By National Shoe & Leather Bank, funds advanced to pay checks	8 72
do 23.	By National Shoe & Leather Bank, funds advanced to pay checks	462 75
do 24.	By National Shoe & Leather Bank, funds advanced to pay checks	98 25

May	25.	By National Shoe & Leather Bank, funds advanced to pay checks	\$24 62
do	26.	By National Shoe & Leather Bank, funds advanced to pay checks	66 98
do	28.	By National Shoe & Leather Bank, funds advanced to pay checks	65 74
do	31.	By National Shoe & Leather Bank, funds advanced to pay checks	11,091 48
June	2.	By National Shoe & Leather Bank, funds advanced to pay checks	5,933 69
do	4.	By National Shoe & Leather Bank, funds advanced to pay checks	515 06
do	5.	By National Shoe & Leather Bank, funds advanced to pay checks	341 38
do	7.	By National Shoe & Leather Bank, funds advanced to pay checks	186 12
do	9.	By National Shoe & Leather Bank, funds advanced to pay checks	698 96
do	13.	By National Shoe & Leather Bank, funds advanced to pay checks	2,500 00
do	16.	By National Shoe & Leather Bank, funds advanced to pay checks	386 88
do	18.	By National Shoe & Leather Bank, funds advanced to pay checks	750 00
do	19.	By National Shoe & Leather Bank, funds advanced to pay checks	250 00
do	20.	By National Shoe & Leather Bank, funds advanced to pay checks	600 00
do	21.	By National Shoe & Leather Bank, funds advanced to pay checks	183 46
do	22.	By National Shoe & Leather Bank, funds advanced to pay checks	25 00
do	23.	By National Shoe & Leather Bank, funds advanced to pay checks	681 61
do	26.	By National Shoe & Leather Bank, funds advanced to pay checks	2,745 33
			<hr/>
			\$41,583 60
April	13.	By National Shoe & Leather Bank, funds advanced on account:	
		Extraordinary expenses in town of Yonkers	100 00

Sept. 28.	By National Shoe & Leather Bank, on account:	
	Extraordinary expenses in town of Newtown	\$6 00
Oct. 5.	By National Shoe & Leather Bank, on account:	
	Extraordinary expenses in town of Flushing	100 00
Oct. 15.	By National Shoe & Leather Bank, on account:	
	Extraordinary expenses in town of Newtown	246 00
		<u>\$42,035 60</u>

County of New York.

1866.

Aug. 4.	By cash from State Treasurer. Estimated expenses for 1866	\$60,847 06
---------	---	-------------

Special Fund for city of New York, under Chapter 837, Laws of 1866.

1866.

June 27.	By cash from Comptroller	\$50,000 00
June 30.	By cash from Comptroller	30,000 00
Sept. 27.	By cash from Comptroller	30,000 00
Oct. 11.	By cash from Comptroller	40,000 00
		<u>\$150,000 00</u>

Fund for cleaning streets (not included in contract) in city of New York, under Chapter 876.

1866.

June 2.	By cash from Comptroller	\$6,000 00
---------	--------------------------------	------------

Loan Account.

1866.

July 21.	By National Shoe and Leather Bank, borrowed for county of Kings, on obligation of the board, dated June 20, 1866 at 10 months	\$23,000 00
----------	---	-------------

Sept 25.	By National Shoe and Leather Bank, borrowed for extraordinary expenses in Co. of Kings, on obligation of the board, dated Sept. 17, 1866, at 6 months	\$25,000 00
Nov. 15.	By National Shoe and Leather Bank, borrowed for extraordinary expenses in Co. of Kings, on obligation of the board, dated Nov. 15, 1866, at 4 months	15,000 00
		<hr/>
		\$63,000 00
		<hr/> <hr/>

Fines and Penalties—County of New York.

1866.

Aug.	1. By Michael Schmalenberger	\$10 00
	2. By E. T. Brown	10 00
		<hr/>
		\$20 00
		<hr/> <hr/>

DISBURSEMENTS.

GENERAL EXPENSES.

Furnishing and Fitting Up.

1866.

April	24. To Bruner & Moore	\$206 00
	24. To J. W. Southack	100 00
	24. To W. & J. Sloane	974 97
	24. To C. A. Palmieri	8 00
	24. To Emmons Clark	202 60
	24. To H. H. Casey	91 95
	24. To E. Foerster & Co.	27 50
May	4. To D. Strauss	3 25
	4. To J. W. Southack	424 00
	24. To O. D. Case	13 50
	25. To Ord & Woods	12 00
June	5. To D. Strauss	1 00
	5. To G. Lanter	2 50
	5. To J. Ziegler & Co	18 00
	9. To J. W. Southack	183 00
	9. To G. W. Sneden & Campbell ..	111 00
	16. To O. D. Case	20 00
	16. To J. Arnold & Co	9 50

METROPOLITAN BOARD OF HEALTH.

81

June	16.	To H. H. Casey	\$28 30
	16.	To Ord & Woods	130 00
July	7.	To P. & T. Maher	27 69
	7.	To H. H. Casey	14 00
	7.	To Robert Patton	18 50
	7.	To D. Strauss	1 50
	16.	To Wm. Hall	7 00
	17.	To J. G. Reither	45 00
	18.	To Keyser & Co.	111 12
	31.	To E. Kimball	10 00
Aug.	3.	To D. Strauss	1 80
	28.	To D. Strauss	2 70
	31.	To Wm. Maher	18 00
Sept.	21.	To Thomas King	137 50
Oct.	11.	To D. Strauss	1 40
	11.	To D. McQuien	41 68
	19.	To John Terheun	15 00
			<hr/>
			\$3,019 96
			<hr/>

Contingent Expenses.

1866.

April	16.	To New York Post office	\$65 00
	24.	To Reynolds, Pratt & Co	37 30
	24.	To Mary Connelly	24 00
	24.	To J. Norton	15 66
	24.	To John E. F. Cleghorn	5 26
April	24.	To George L. Crane	2 74
	24.	To Emmons Clark	73 32
	24.	To F. Sass	6 00
May	4.	To Margaret Lyon	47 00
	4.	To John E. F. Cleghorn	6 62
	4.	To George L. Crane	5 76
	4.	To John Bowne	6 35
	11.	To Mary Connelly	16 75
	14.	To New York Post Office	70 00
	22.	To S. Livingston	8 72
	25.	To John Bowne	12 62
June	4.	To Maria Lyon	27 00
	4.	To Mary Connelly	21 25

June	5. To John Bowne	\$4 42
	5. To J. Norton	30 24
	5. To F. Sass	6 00
	5. To Henry Reeve	113 50
	16. To S. Livingston	8 72
	23. To New York Post Office	55 00
	23. To Thos. Clark	10 50
	30. To Mary Connelly	21 50
July	30. To Maria Lyon	27 00
	6. To P. Nichols & Co.	9 08
	7. To John Bowne	8 58
	17. To S. Livingston	9 04
	17. To Jacob Webb	2 28
	31. To Mary Connelly	21 75
	31. To Maria Lyon	27 00
	31. To New York Post Office	50 00
Aug.	11. To P. Nichols & Co.	10 60
	17. To S. Livingston	9 04
	28. To John Bowne	15 01
	28. To Geo. F. Nesbitt & Co.	8 75
	31. To Mary Connelly	14 00
	31. To Maria Lyon	34 75
	31. To James Fitzpatrick	7 45
Sept.	6. To P. Nichols & Co.	9 45
	6. To C. Golderman, Jr.	6 14
	14. To S. Livingston	9 04
	19. To New York Post Office	50 00
	29. To Maria Lyon	34 50
	29. To Mary Connelly	14 00
Oct.	11. To P. Nichols & Co.	8 12
	15. To S. Livingston	9 04
	31. To Mary Connelly	14 00
	31. To Maria Lyon	34 75
		<hr/>
		\$1,144 60
		<hr/>

Stationery and Printing.

1866.

April	24. To M. Jacobs	\$50 00
	24. To John W. Amerman	310 68
	24. To Bergen & Tripp	187 00
	24. To Emmons Clark	8 00

METROPOLITAN BOARD OF HEALTH.

83

May	4.	To E. H. Kinsland & Co.....	\$77 00
	23.	To Bergen & Tripp.....	462 75
June	5.	To W. H. Kelley & Co.....	1 50
	26.	To W. C. Bryant & Co.....	210 00
	26.	To J. Van Anden.....	395 80
	26.	To Bradley, R. Hard & Co.....	202 18
	26.	To Bergen & Tripp.....	617 68
	27.	To Francis & Loutrel.....	5,200 00
	27.	To John W. Amerman.....	494 92
Aug.	8.	To Bergen & Tripp.....	327 81
			<hr/>
			\$8,545 32
			<hr/> <hr/>

Advertising.

1866.

June	2.	To Commercial Advertiser Association....	\$770 50
	2.	To W. C. Bryant & Co.....	813 50
	5.	To New York Herald.....	12 00
	5.	To Tribune Association.....	4 50
	5.	To Journal of Commerce.....	4 32
	5.	To W. C. Bryant & Co.....	17 10
	5.	To Brooklyn Daily Union.....	22 80
July	17.	To W. C. Bryant & Co.....	17 10
Oct.	26.	To W. C. Bryant & Co.....	18 00
Nov.	3.	To W. C. Bryant & Co.....	17 10
			<hr/>
			\$1,696 92
			<hr/> <hr/>

Badges and Emblems.

1866.

April	14.	To A. Demarest.....	\$246 25
May	31.	To John W. Orr.....	80 00
June	5.	To A. Demarest.....	20 00
Aug.	24.	To A. Demarest.....	28 00
			<hr/>
			\$374 25
			<hr/> <hr/>

Special Clerk Hire.

1866.

April	30.	To temporary clerks.....	\$281 38
			<hr/> <hr/>

Health Officer.

1866.

May	31.	To three months' salary to date..	\$125 00	
		Less deductious	8 00	
				<u>\$117 00</u>
Aug.	31.	To three months' salary to date		125 00
				<u>\$242 00</u>

Treasurer.

1866.

May	31.	To three months' salary, to date.....	\$125 00	
Aug.	31.	To three months' salary, to date		125 00
				<u>\$250 00</u>

Engineer.

1866.

July	14.	To 2 3-5 months' salary to June 30	\$866 67	
Sept.	29.	To three months' salary, to date.....	1,000 00	
Oct.	31.	To one month's salary, to date	333 33	
				<u>\$2,200 00</u>

Attorney.

1866.

July	13.	To 3 5-6 months' salary, to June 30.....	\$958 33	
Aug.	31.	To 2 2-3 months' salary, to Sept. 20	666 67	
Sept.	29.	To one month's salary, to Oct. 20.....	250 00	
Oct.	31.	To one month's salary to Nov. 20.....	250 00	
				<u>\$2,125 00</u>

Secretary.

1866.

April	14.	To salary to March 31.....	\$217 74	
	30.	To one month's salary	250 00	
May	31.	To one month's salary	250 00	
June	30.	To one month's salary	250 00	
July	31.	To one month's salary	250 00	
Aug.	31.	To one month's salary	250 00	
Sept.	29.	To one month's salary	250 00	
Oct.	31.	To one month's salary	250 00	
				<u>\$1,967 74</u>

Sanitary Superintendent.

1866.

April	14.	To salary to March 31	\$279 56
	30.	To one month's salary	333 33
May	21.	To one month's salary	333 34
June	30.	To one month's salary	333 33
July	31.	To one month's salary	333 33
Aug.	31.	To one month's salary	333 33
Sept.	29.	To one month's salary	333 34
Oct.	31.	To one month's salary	333 33
			<hr/>
			\$2,612 89
			<hr/>

Corresponding Secretary.

1866.

April	30.	To one month's salary	\$41 67
May	31.	To one month's salary	41 67
June	30.	To one month's salary	41 67
July	31.	To one month's salary	41 67
Aug.	31.	To one month's salary	41 67
Sept.	29.	To one month's salary	41 66
Oct.	31.	To one month's salary	41 67
			<hr/>
			\$291 68
			<hr/>

Clerks to Secretary.

1866.

April	14.	To salaries for March	\$253 21
	30.	To salaries for April	506 66
May	31.	To salaries for May	666 66
June	30.	To salaries for June	770 00
July	31.	To salaries for July	850 00
Aug.	31.	To salaries for August	700 00
Sept.	12.	To W. H. Kimball—services	90 00
	29.	To salaries for September	700 00
Oct.	31.	To salaries for October	700 00
			<hr/>
			\$5,236 53
			<hr/>

Clerks to Sanitary Superintendent.

1866.

April	14.	To salaries for March	\$116 39
	30.	To salaries for April	144 99
May	31.	To salaries for May	175 00

June	30.	To salaries for June	\$175 00
July	31.	To salaries for July	175 00
Aug.	31.	To salaries for August	175 00
Sept.	29.	To salaries for September	175 00
Oct.	31.	To salaries for October	175 00
			<hr/>
			\$1,311 38
			<hr/>

Treasurer's Book-keeper.

1866.

April	14.	To salary for March	\$74 19
	30.	To salary for April	100 00
May	31.	To salary for May	150 00
June	30.	To salary for June	150 00
July	31.	To salary for July	150 00
Aug.	31.	To salary for August	150 00
Sept.	20.	To salary for September	150 00
Oct.	31.	To salary for October	150 00
			<hr/>
			\$1,074 19
			<hr/>

Messengers and Janitor.

1866.

April	14.	To salaries for March	\$88 70
	30.	To salaries for April	100 00
May	28.	To Geo L. Crane, for services	32 87
	28.	To John E. F. Cleghorn, for services	32 87
June	16.	To Martin Kelly, for services	70 00
	16.	To Jas. Fitzpatrick, for services	46 66
	30.	To salaries for June	100 00
	30.	To W. Hover, for services in May	45 00
July	31.	To salaries for July	100 00
Aug.	31.	To salaries for August	100 00
Sept.	29.	To salaries for September	100 00
Oct.	31.	To salaries for October	100 00
			<hr/>
			\$916 10
			<hr/>

COUNTY OF NEW YORK.

Commissioners.

1866.

May	31.	To Jackson S. Shultz, three months' salary to date	\$625 00
-----	-----	---	----------

	31. To Willard Parker, three months' salary to date	\$625 00
	31. To John O. Stone, three months' salary to date	625 00
	31. To Thos. C. Acton, three months' salary to date	125 00
	31. To Jos. S. Bosworth, three months' salary to date	125 00
	31. To Benj. F. Manierre, three months' salary to date	125 00
	Less deductions	8 06
		<hr/> 117 00
Aug.	31. To Jackson S. Shultz, three months' salary	625 00
	31. To Willard Parker, three months' salary	625 00
	31. To John O. Stone, three months' salary	625 00
	31. To Thomas C. Acton, three months' salary	125 00
	31. To Jos. S. Bosworth, three months' salary	125 00
	31. To Benj. F. Manierre, three months' salary	125 00
		<hr/> \$4,492 00

Sanitary Inspectors.

1866.

April	14. To salaries for March	\$496 74
	30. To salaries for April	760 00
May	31. To salaries for May	700 00
June	30. To salaries for June	850 00
July	31. To salaries for July	850 00
Aug.	31. To salaries for August	850 00
Sept.	29. To salaries for September	850 00
Oct.	31. To salaries for October	825 00
		<hr/> \$6,181 74

Complaint Clerk.

1866.

April	14. To salary for March	\$130 64
	30. To salary for April (1 to 20)	100 00
May	31. To salary for May	150 00
June	30. To salary for June	150 00
July	31. To salary for July	150 00
Aug.	31. To salary for August	150 00

Sept.	29.	To salary for September	\$150 00
Oct.	31.	To salary for October	150 00
			<hr/>
			\$1,130 64
			<hr/>

Assistant Complaint Clerk.

1866.

April	14.	To salary for March	\$62 62
	30.	To salary for April	58 33
May	31.	To salary for May	58 33
June	30.	To salary for June	83 33
July	31.	To salary for July	83 33
Aug.	31.	To salary for August	83 33
Sept.	29.	To salary for September	83 34
Oct.	31.	To salary for October	83 33
			<hr/>
			\$595 94
			<hr/>

Special Clerk Hire.

1866.

April	24.	To P. H. Noonan, for services	\$40 00
	24.	To Thos. B. Bills, for services	18 00
	24.	To R. T. Bailey, for services	15 00
	24.	To W. H. Marston, for services	18 62
May	4.	To James H. Fitch, for services	1 91
			<hr/>
			\$93 53
			<hr/>

Clerk in Sanitary Police Office.

1866.

June	30.	To salary for June	\$26 66
July	31.	To salary for July	100 00
Aug.	31.	To salary for August	100 00
Sept.	29.	To salary for September	100 00
Oct.	31.	To salary for October	100 00
			<hr/>
			\$426 66
			<hr/>

Registrar of Records.

1866.

April	14.	To salary for March	\$194 89
	30.	To salary for April	208 33
May	31.	To salary for May	208 33
June	30.	To salary for June	208 33

July	31.	To salary for July	\$208 33
Aug.	31.	To salary for August	208 33
Sept.	29.	To salary for September	208 34
Oct.	31.	To salary for October	208 33

\$1,653 21

Clerks to Registrar of Records.

1866.

April	14.	To salaries for March	\$292 98
	30.	To salaries for April	516 64
May	31.	To salaries for May	516 67
June	30.	To salaries for June	666 66
July	31.	To salaries for July	666 67
Aug.	31.	To salaries for August	666 67
Sept.	29.	To salaries for September	666 68
Oct.	31.	To salaries for October	666 67

\$4,659 64

COUNTY OF KINGS.

Commissioners.

1866.

May	31.	To James Crane, three months' salary to date	\$625 00
		Less deduction	10 00
			<hr/>
			\$615 00
	31.	To John G. Bergen, three months' salary to date	\$125 00
		Less deduction	6 00
			<hr/>
			119 00
Aug.	31.	To James Crane three m'ths' salary to date	625 00
	31.	To John G. Bergen, three months' salary to date	125 00
			<hr/>
			\$1,484 00

Assistant Sanitary Superintendent.

1866.

April	14.	To salary for March	\$161 29
	30.	To salary for April	250 00
May	31.	To salary for May	250 00
June	30.	To salary for June	250 00

July	31.	To salary for July.....	\$250 00
Aug.	31.	To salary for August	250 00
Sept.	29.	To salary for September.....	250 00
Oct.	31.	To salary for October.....	250 00

\$1,911 29

Clerks to Assistant Sanitary Superintendent.

1866.

April	14.	To salaries for March	\$151 06
	30.	To salaries for April	258 33
May	31.	To salaries for May	258 33
June	30.	To salaries for June	258 33
July	31.	To salaries for July	258 33
Aug.	31.	To salaries for August	258 33
Sept.	29.	To salaries for September	258 33
Oct.	31.	To salaries for October.....	258 33

\$1,959 38

Deputy Registrar of Records.

1866.

April	14.	To salary for March.....	\$96 77
	30.	To salary for April.....	150 00
May	31.	To salary for May	150 00
June	30.	To salary for June	150 00
July	31.	To salary for July	150 00
Aug.	31.	To salary for August	150 00
Sept.	29.	To salary for September	150 00
Oct.	31.	To salary for October.....	150 00

\$1,146 77

Sanitary Inspectors.

1866.

April	14.	To salaries for March.....	\$377 40
	30.	To salaries for April	600 00
May	31.	To salaries for May	600 00
June	30.	To salaries for June	650 00
July	31.	To salaries for July	650 00
Aug.	31.	To salaries for August	650 00

Sept. 29.	To salaries for September	\$650 00
Oct. 31.	To salaries for October	600 00
		<hr/>
		\$4,777 40
		<hr/> <hr/>

Contingent Expenses.

1866.

July 7.	To Dr. J. B. Jones	\$125 00
	7. To George Bell	1 20
		<hr/>
		\$126 20
		<hr/> <hr/>

Interest.

1866.

July 21.	To National Shoe and Leather Bank, discount on \$23,000 borrowed for county of Kings, on obligation of the Board, dated June 20, at 10 months	\$1,217 42
----------	---	------------

EXTRAORDINARY EXPENSES—GENERAL.

Miscellaneous Expenses.

1866.

April 24.	To C. A. Palmieri	\$2 17
	24. To steamer "Martha Washington"	54 00
May 4.	To C. A. Palmieri	1 75
	31. To E. B. Dalton	3 50
June 9.	To C. A. Palmieri	10 96
	16. To Sanford, Harroun & Co	131 50
July 9.	To W. H. Kimball	20 12
	17. To Bergen & Tripp	625 06
	27. To W. H. Kimball	15 61
	31. To John F. Trow	20 00
	31. To Martin Kelly	10 74
	31. To James Fitzpatrick	12 00
Aug. 2.	To Francis & Loutrel	358 85
	2. To M. B. Brown & Co	211 00
	2. To Sanford, Harroun & Co	46 50
	2. To Robert Paton	354 00
	11. To W. H. Kelly & Co	78 90
	17. To Samuel St. John	70 00

Aug.	22.	To W. E. Worthen.....	\$148 50
	22.	To Robert Paton.....	32 00
Sept.	6.	To Bergen & Tripp.....	444 02
	29.	To Francis & Loutrel.....	660 35
	29.	To C. Golderman, Jr.....	33 03
	29.	To John Bowne.....	8 18
Oct.	11.	To Sanford, Harroun & Co.....	27 25
	11.	To Francis & Loutrel.....	463 78
	11.	To Bergen & Tripp.....	71 00
	18.	To J. Norton.....	10 65
	26.	To C. Golderman, Jr.....	25 91
	29.	To Treasurer.....	70 00
Nov.	3.	To John Brady.....	10 34
	7.	To J. Haven Emerson.....	10 97
	8.	To J. S. Schultz.....	49 85
			<hr/>
			\$4,092 49
			<hr/> <hr/>

Special Clerk Hire.

1866.

May	31.	To E. M. Bullock, for services.....	\$56 66
	31.	To salaries for May.....	325 00
June	9.	To James Q. Miles, for services.....	90 00
	26.	To Eugene Kelterborn, for services.....	166 66
	30.	To H. W. Depuy, for services.....	83 33
	30.	To James A. Hill, for services.....	93 33
	30.	To W. H. Littlepage, for services.....	73 33
	30.	To Charles W. Fitch, for services.....	63 88
	30.	To James A. Hill, overwork.....	23 50
	30.	To salaries for June.....	960 52
July	23.	To H. W. Depuy, services.....	87 50
	31.	To salaries for July.....	941 65
Aug.	31.	To salaries for August.....	649 99
Sept.	6.	To C. Golderman, Jr., overwork.....	7 50
	29.	To salaries for September.....	566 68
Oct.	31.	To salaries for October.....	566 66
			<hr/>
			\$4,756 19
			<hr/> <hr/>

Law Expenses.

1866.

July	31. To Charles Tracy	\$2,000 00
	31. To Warburton and Underhill	83 00
		<hr/>
		\$2,083 00
		<hr/> <hr/>

Expenditures at Sequine's Point.

1866.

June	7. To Emmons Clark, rev. stamp for lease, &c	\$24 75
	7. To E. H. Reeves & Co., wheelbarrows	33 50
	9. To pay of laborers and mechanics	200 00
	13. To A. K. Johnston, on account lease	2,500 00
	18. To pay of laborers and mechanics	750 00
	20. To pay of laborers and mechanics	600 00
	23. To pay of laborers and mechanics	500 00
	26. To John S. McLean, lumber	200 50
	26. To Thomas M. Shepard, stove and fixtures	117 00
	28. To E. H. Reeves & Co., sundries	33 25
	29. To John G. Vaughn, mason work	726 00
July	9. To A. K. Johnston, in full for lease	2,500 00
	9. To pay of laborers and mechanics	1,200 00
Aug.	2. To M. P. Low, ranges	927 00
	16. To S. R. Brick, Jr., steam fitting, &c.	2,457 14
	24. To P. C. Ruck, repairing boat	45 62
	24. To Thomas Godsell, hardware	57 45
	29. To H. W. Depuy, sundries	165 25
Sept.	6. To John Blake, labor	23 00
	15. To E. Taylor & Co., lumber	604 23
Oct.	23. To John Swinburne, sundries	120 00
		<hr/>
		\$13,785 69

Supplies for Police.

1866.

June	7. To John Winaus & Co.	\$105 87
	7. To Trusdell & Phelps	21 00
	21. To W. H. Kimball	52 66
	22. To T. Killilea	25 00
	23. To M. T. Holbrook	42 11
	26. To W. S. Fogg & Co.	667 75

June	26.	To E. Treadwell's Sons.....	\$14 93
	27.	To G. W. Walling	58 26
	28.	To John F. Raymond.....	72 16
	30.	To S. T. Baker & Co	12 50
	30.	To John T. Raymond.....	50 94
July	3.	To Chester Driggs	49 08
	5.	To A. Gavron	175 50
	7.	To G. W. Walling	58 51
	7.	To W. K. Peyton	6 00
	9.	To A. A. Boyd	15 68
	9.	To Thomas R. Agnew.....	279 38
	10.	To Henry Jay	909 71
	10.	To Jacob R. Reed.....	30 02
	10.	To A. L. Earle & Son	173 97
	10.	To M. P. Low.....	6 00
	10.	To John White.....	137 75
	11.	To W. R. & H. R. Eadie	21 00
	11.	To R. & J. Mowbray	53 17
	11.	To John White.....	15 45
	11.	To W. Robertson	315 00
	14.	To Henry Jay	27 64
	18.	To G. W. Walling	22 31
	26.	To William Conway.....	13 70
Sept.	14.	To Sullivan, Randolph & Budd..	287 50
	14.	To Richard Hunt.....	35 00
Nov.	3.	To Banendahl & Co	250 00
			<hr/> \$4,005 55
			<hr/> \$17,791 24
			<hr/> <hr/>

EXTRAORDINARY EXPENSES—COUNTY OF NEW YORK.

Assistant Inspectors.

1866.

April	30.	To salaries for April	\$2,190 00
May	26.	To William McManus, services.....	52 48
	31.	To salaries for May	2,200 00
June	30.	To salaries for June	1,926 66
	30.	To Lewis Applegate, services in May	13 33
July	5.	To Samuel R. Percy, services in May and June	136 66
	31.	To Samuel R. Percy, services in July.....	20 00

July	31.	To salaries for July	\$1,850 00
Aug.	11.	To W. V. White, services in June and July,	120 00
	31.	To salaries for August	2,199 99
Sept.	29.	To salaries for September	2,210 00
Oct.	31.	To salaries for October	725 00
			<hr/>
			\$13,644 12
			<hr/>

Special Clerk Hire.

1860.

June	30.	To salaries for June	\$125 00
	30.	To Robert T. Bailey	35 50
	30.	To W. H. N. Cadmus	22 50
	30.	To George S. Wheeler	38 00
	30.	To W. W. Tracy	69 44
	30.	To George W. Dick	25 00
	30.	To Jacob A. Weil	34 00
	30.	To Lewis Kranshaar	32 00
	30.	To C. W. Tyler	32 25
July	31.	To salaries for July	83 33
Oct.	31.	To salaries for October	50 00
			<hr/>
			\$547 02
			<hr/>

Miscellaneous Expenses.

1866.

June	5.	To John F. Trow	\$12 50
	19.	To Oakley & Smith	250 00
	21.	To J. S. Schultz	130 80
	26.	To J. Henry Anderson	10 00
	26.	To T. M. McGinn	32 53
	26.	To John Purcell	10 00
	26.	To E. J. Janeway	10 00
	26.	To W. F. Thoms	10 00
	26.	To George Badger	10 00
	26.	To Bowen G. Lord	12 50
	28.	To Thomas Ritter	12 95
July	7.	To John Fisher	9 00
	7.	To Labor and Aid Association	9 63
	9.	To Calvin Witty	38 00
	9.	To Bowen G. Lord	2 50
	9.	To David Hall	175 00
	14.	To C. A. Palmieri	4 00

July	19. To I. Y. Whitson & Sons.....	\$250 00
	27. To I. Y. Whitson & Sons.....	250 00
	31. To William Smith	25 00
Aug.	2. To G. J. Moore	90 00
	2. To I. Y. Whitson & Sons.....	250 00
	3. To W. H. Kimball.....	6 05
	3. To Calvin Witty.....	415 00
	3. To Wilson & Shields.....	59 00
	3. To Thomas L. Parker, Jr.....	5 50
	11. To I. Y. Whitson & Sons.....	500 00
	15. To Charles Currier.....	27 00
	15. To Sanford, Harroun & Co.....	133 63
	17. To Betts, Nichols & Co	42 00
	17. To M. O. Hallenbeck.....	10 00
	28. To Philip Meeany	7 00
	31. To Frank Ashe.....	8 00
	31. To J. S. Schultz	607 21
Sept.	6. To Wilson & Shields ..	127 00
	6. To Betts, Nichols & Co	5 50
	6. To John Brady.....	18 24
	6. To Sanford, Harroun & Co	26 13
	6. To G. J. Moore.....	1 50
	6. To Baldwin & Jones.....	5 00
	6. To Betts, Nichols & Co	13 00
	6. To Francis & Loutrel.....	16 23
	6. To J. Haven Emerson	6 23
	14. To Frank Ashe.....	25 88
	14. To Wilson & Shields.....	20 00
	14. To John Conway	13 13
	21. To Robert Lennox	6 74
	29. To H. H. Casey.....	14 90
	29. To Betts, Nichols & Co	100 68
	29. To E. P. Clark	11 96
Oct.	11. To A. W. Maclay.....	10 50
	11. To Wilson & Shields	151 00
	19. To John F. Trow	15 00
	19. To Atchison & Hamil.....	3 00
	19. To John Conway	13 89
	19. To E. P. Clark	4 15
	19. To H. H. Casey.....	33 33
	26. To Frank Ashe.....	25 56

Nov.	3. To Frank Ashe.....	\$15 88
	3. To Wilson & Shields.....	136 00
	3. To Keyser & Co.....	1,802 00
		<hr/>
		\$6,047 23
		<hr/>

Hospital Expenses.

1866.

April	30. To James A. Christie.....	\$26 66
May	24. To Wilson & Shields.....	8 75
	24. To William Horan.....	24 00
	24. To E. Van Ranst.....	22 00
	24. To H. Ernest.....	30 00
	31. To James A. Christie.....	100 00
June	2. To Keyser & Co.....	4,100 00
	4. To Ogden & Co.....	466 81
	5. To Randolph & Skidmores.....	27 00
	5. To T. B. Renton.....	44 00
	23. To William West.....	40 00
	30. To William West.....	50 00
July	17. To I. S. Buckman.....	15 00
	17. To John Wadlin.....	2 25
Aug.	4. To William West.....	50 00
	8. To M. J. Kelly.....	5 00
	8. To Labor and Aid Association.....	10 56
	8. To J. C. Lamont.....	40 00
	8. To T. T. Davis.....	9 60
	11. To Calvin Witty.....	287 00
	11. To William Gardner.....	543 30
	11. To Edward Hart & Co.....	204 00
	11. To J. Marton.....	111 70
	11. To Pay roll—"Battery Barrack Hospital,"	128 91
	15. To Conrad Fox.....	244 16
	15. To Dixon, Clarks & Hallet.....	10 18
	15. To J. Morton.....	40 25
Aug.	15. To Wm. Gardner.....	395 40
	15. To H. H. Casey.....	162 30
	17. To "New York Sun".....	4 80
	17. To Joshua Ronchetti.....	12 00
	17. To Henry Cordes.....	125 00
	17. To H. W. Monsees.....	133 03

Aug.	22. To P. Strobel	\$39 00
	22. To F. Berkelmann	93 56
	22. To Aaron May	80 58
	24. To H. W. Monsees	5 60
	24. To H. H. Casey	9 05
	24. To Keyser & Co	247 29
	24. To Edward Hart & Co	34 00
	24. To Dibblee, Moore & Co	49 60
	24. To Labor and Aid Association	26 22
	25. To Mary Lind	8 66
	25. To Dexter Howe	90 00
	27. To Anna E. Brant	4 00
	27. To Patrick Connors	17 60
	27. To Stephen Brierly	24 00
	28. To W. E. Dusenberry	5 10
	28. To Dixon, Clarks & Hallett	9 81
	28. To Lord & Taylor	3 75
	28. To Edward Hart & Co	48 00
	31. To Pay Roll—"Battery barracks" Hospital	784 12
	31. To Pay Roll—"Red House" Hospital	610 52
Sept.	6. To John Conway	4 80
	6. To Mary Conway	2 00
	6. To Conrad Fox	417 14
	6. To William Gardner	15 00
	6. To E. P. Clark	4 00
	6. To New York Ice Co	13 19
	6. To Stephen Lutz	38 88
	6. To E. Harrison	3 75
	6. To Joshua Ronchetti	6 00
	6. To M. Buckman	27 00
	6. To Joseph M. Ward	31 50
	6. To Edward Hart & Co	19 40
	6. To H. H. Casey	3 60
	6. To E. Burke & Co	738 58
	6. To Charles Clifford	57 00
	6. To John Clear	123 20
	6. To Cox & Derry	399 78
	6. To T. Butcher	4 50
	6. To I. T. Reeve	10 54
	6. To Thomas H. White	6 80
	6. To Philip L. Klein	31 30

Sept.	6. To John S. Widder	\$426 75
	6. To B. O'Rourke	74 56
	6. To Thomas H. White	6 06
	6. To Lewis Schneider	292 44
	6. To John L. Widder	84 92
	6. To Robert C. Minor & Co.	23 25
	7. To Jeremiah Whalen	4 80
	7. To Patrick Walsh	2 40
	11. To Henry Elsner	13 33
	11. To C. A. Palmieri	13 33
	14. To Thomas Brown	50 00
	14. To W. J. Porter	7 00
	15. To Nathan Wilson	11 20
	17. To Walter Maloney	12 00
	20. To Hugh Kerr	25 50
	21. To Labor and Aid Association	39 15
	29. To Pay Roll—"Red House" Hospital	437 00
	29. To Pay Roll—"Battery barracks" Hospital	684 40
Oct.	11. To Labor and Aid Association	41 45
	11. To Philip Klein	32 60
	11. To M. Tully	18 00
	11. To New York Gas Light Co.	129 01
	11. To Robert C. Minor & Co.	12 00
	11. To Bernard O'Rourke	54 13
	11. To Knickerbocker Ice Co	59 85
	11. To Louis Schneider	208 88
	11. To Thomas H. White	4 34
	11. To John Oliver & Son	59 50
	11. To John L. Widder	372 86
	11. To E. Burke & Co	543 70
	11. To Cox & Derry	329 96
	11. To John Clear	72 83
	11. To New York Ice Co	16 80
	13. To Thomas Geary	2 40
	15. To Pay Roll—Battery Barracks	197 00
	15. To Thomas R. Pooley	3 13
	19. To E. Burke & Co	176 88
	19. To John Clear	29 90
	19. To Cox & Derry	143 35
	19. To John Oliver & Son	17 70
	19. To New York Ice Co	3 80

Oct.	19.	To I. T. Reeve	\$8 50
	26.	To Harlem Gas Light Co.....	44 80
	31.	To Pay Roll—Battery Barracks and Red House Hospitals.....	112 50
Nov.	3.	To Labor and Aid Association	33 12
			<hr/>
			\$16,559 16
			<hr/>

Disinfecting Expenses.

1866.

May	26.	To E. Harris	\$14 50
June	2.	To Keyser & Co	249 69
	23.	To James B. Gardner.....	34 00
	30.	To James B. Gardner.....	66 50
	30.	To David Porter.....	24 00
	30.	To James A. Christie.....	100 00
July	7.	To M. Cain	13 00
	7.	To Wm. McAnepoy.....	10 00
	10.	To Dixon, Clarks & Hallett	5,032 74
	10.	To J. H. Crocker	134 00
	12.	To George Merritt	37 50
	24.	To E. Palmer	10 00
	31.	To D. Geary	228 00
	31.	To Pay Roll—"Disinfecting Depot"	431 00
Aug.	2.	To M. C. Rich	2,524 90
	3.	To Kate Garry	15 00
	4.	To George Merritt.....	87 50
	8.	To John D Blake	13 00
	8.	To B. W. Jewett—Patent Leg Company..	75 00
	8.	To Pay Roll—laborers and cartmen—dis- infecting streets.....	895 00
	11.	To Page, Kidder & Co.....	59 00
	11.	To Gifford, Sherman & Innis	591 29
	15.	To J. L. & D. S. Riker	2,940 26
	18.	To Edward McMulkin.....	36 00
	22.	To Dixon, Clarks & Hallett.....	17 42
	28.	To A. G. Hennion	3 00
	28.	To Theodore Ploeger.....	4 20
	31.	To D. Geary	476 50
	31.	To Pay roll—disinfecting depot.....	1,026 00
	31.	To Pay roll—laborers and cartmen—dis- infecting streets	1,082 00

Sept.	5.	To Thomas H. McCann	\$8 00
	5.	To Edward McMulkin	8 00
	6.	To M. C. Rich	2,403 20
	6.	To Dixon, Clarks & Hallett	113 85
	6.	To James A. Christie	10 85
	6.	To Delluc & Co	3 32
	6.	To H. W. Monsees	8 00
	6.	To Dixon, Clarks & Hallett	23 29
	11.	To B. W. Jewett—Patent Leg Company..	50 00
	14.	To Page, Kidder & Co	264 50
	14.	To Conrad Fox	29 13
	21.	To Dixon, Clarks & Hallett	97 82
	25.	To F. B. Tinelle	50 00
	29.	To Delluc & Co	1 88
	29.	To Pay roll, laborers and cartmen, disinfecting streets	476 00
	29.	To Pay roll disinfecting depot	925 00
	29.	To H. W. Monsees	4 00
	29.	To James A. Christie	14 71
Oct.	8.	To B. W. Jewett—Patent Leg Company..	50 00
	11.	To Delluc & Co	4 41
	11.	To Thomas Brown	38 00
	11.	To Thomas Meagher	2 50
	11.	To Dixon, Clarks & Hallett	119 08
	11.	To H. W. Monsees	12 00
	11.	To Pay roll, disinfecting depot (employees discharged)	145 00
	18.	To Pay roll, disinfecting depot (employees discharged)	189 00
Oct.	31.	To Pay roll, disinfecting depot (employees discharged)	340 00
	31.	To pay roll, laborers and cartmen, disinfecting streets	266 00
Nov.	3.	To Dixon, Clarks & Hallett	7 50
	3.	To James A. Christie	16 25

\$21,912 29

EXTRAORDINARY EXPENSES—COUNTY OF KINGS.

1866. *Assistant Inspectors.*

April	30.	To salaries for April	.....	\$546 66
May	31.	do do May	.....	600 00
June	30.	do do June	.....	636 66
July	31.	do do July	.....	583 34
Aug.	31.	do do August	.....	1,285 73
Sept.	29.	do do September	.....	650 00

\$4,302 39
1866. *Miscellaneous Expenses.*

June	30.	To John T. Van Pelt	.....	\$10 00
July	7.	To John T. Van Pelt	.....	6 00
	16.	To John T. Van Pelt	.....	3 00
	27.	To William Fagan	.....	187 00
Aug.	4.	To John B. Denyse	.....	179 00
Sept.	21.	To Horace Strang	.....	6 00
	29.	To George Bell	.....	1 60
Nov.	7.	To I. M. Allen, Jr.	.....	26 60

\$419 20
1866. *Hospital Expenses.*

June	9.	To John E. Smith & Son	.....	\$104 00
July	27.	To Commissioners Crane and Bergen (Com- mittee)	.....	500 00
	31.	To Commissioners Crane and Bergen (Com- mittee)	.....	1,500 00
Aug.	2.	To Commissioners Crane and Bergen (Com- mittee)	.....	2,000 00
	7.	To Commissioners Crane and Bergen (Com- mittee)	.....	2,000 00
	11.	To P. L. Schenck	.....	25 80
	11.	To James R. Bird	.....	15 00
	11.	To J. E. Smith & Son	.....	466 25
	11.	To F. H. Colton	.....	15 00
	17.	C. C. Waller	.....	15 03
	21.	To Commissioners Crane and Bergen (Com- mittee)	.....	5,000 00

Aug.	31.	To Commissioners Crane and Bergen (Com- mittee)	\$2,500 00
	31.	To W. H. Thayer	62 00
	31.	To P. L. Schenck	50 00
	31.	To W. F. Swalm	39 84
	31.	To James R. Bird	50 00
	31.	To F. H. Colton	50 00
Sept.	6.	To Commissioners Crane and Bergen (Com- mittee)	1,000 00
	13.	To Commissioners Crane and Bergen (Com- mittee)	1,500 00
	29.	To James R. Bird	50 00
	29.	To F. H. Colton	50 00
	29.	To W. F. Swalm	50 00
	29.	To P. L. Schenck	11 62
	29.	To W. H. Thayer	11 62
			<hr/>
			\$16,066 16
			<hr/> <hr/>

1866. *Disinfecting Expenses.*

Aug.	2.	To M. C. Rich	\$550 00
	11.	To Page, Kidder & Co.	39 25
	15.	To J. L. & D. S. Riker	2,096 75
			<hr/>
			\$2,686 00
			<hr/> <hr/>

1866. *Street Cleaning.*

Aug.	11.	To P. Dinnigan	\$318 00
	24.	To P. Dinnigan	440 50
Oct.	11.	To Thomas Clyne	208 00
			<hr/>
			\$966 50
			<hr/> <hr/>

1866. *Interest.*

Sept.	25.	To National Shoe and Leather Bank, dis- count on \$25,000, borrowed for extra- ordinary expenses in Kings county—on obligation of the board, dated Sept. 17, at six months	\$843 84
-------	-----	--	----------

Nov.	15.	To National Shoe and Leather Bank, discount on \$15,000, borrowed for extraordinary expenses in Kings county—on obligation of the board, dated Nov. 15, at four months	\$319 32
			<hr/>
			\$1,163 16
			<hr/>

Fund for Cleaning Streets (in New York City), not included in Contract, under Chapter 876, Laws of 1866.

1866.

June	2.	To John May, cleaning Worth street	\$331 75
July	3.	To Dominick Doyle, removing garbage, 97th street and Broadway	12 00
	10.	To Thomas Fealey, cleaning streets in 12th ward	588 00
Aug.	7.	To Thomas Fealey, cleaning streets in 12th ward	400 00
Sept.	11.	To Thomas Fealey, cleaning streets in 12th ward	384 00
Oct.	9.	To Thomas Fealey, cleaning streets in 12th ward	392 00
Nov.	3.	To Thomas Fealey, cleaning streets in 12th ward	344 00
			<hr/>
			\$2,451 75
			<hr/>

Extraordinary Expenses—Town of Yonkers

1866.

April	30.	To J. H. Pooley, on account, services as inspector	\$100 00
			<hr/>

Extraordinary Expenses—Town of Newtown.

1866.

Sept.	28.	To M. McDermott, disinfecting at Hunter's Point	\$6 00
Oct.	15.	To J. S. Schultz, sundry bills, disinfecting	246 00
			<hr/>
			\$252 00
			<hr/>

Extraordinary Expenses—Town of Flushing.

1866.

Oct.	5. To Margaret Drummond, sundries	\$100 00
------	---	----------

1866.

Temporary Loan Account.

June	27. To National Shoe and Leather Bank (in payment of funds borrowed from April 14 to June 26, to pay checks)	\$41,583 60
------	--	-------------

RECAPITULATION.

RECEIPTS.

Temporary loan, account	\$42,035 60
County of New York (for 1866).....	60,847 06
Fund for special expenses of New York city, chapter 837	150,000 00
Fund for cleaning streets, &c., under chapter 876	6,000 00
Loan, account.....	63,000 00
Fines and penalties—county of N. York.	20 00
	<hr/> \$321,902 66

DISBURSEMENTS.

General Expenses:

Furnishing and fitting up.....	\$3,019 96
Contingent expenses	1,144 60
Stationery and printing.....	8,545 32
Advertising	1,696 92
Badges and emblems.....	374 25
Special clerk here	281 38
Health officer	242 00
Treasurer	250 00
Engineer	2,200 00
Attorney.....	2,125 00
Secretary	1,967 74
Sanitary superintendent	2,612 89
Corresponding secretary.....	291 68
Clerks to secretary.....	5,236 53
Clerks to sanitary superintendent..	1,311 38
Treasurer's bookkeeper.....	1,074 19
Messengers and janitor.....	916 10
	<hr/> \$33,289 94

County of New York :

Commissioners	\$4,492 00	
Sanitary inspectors	6,181 74	
Complaint clerk	1,130 64	
Assistant complaint clerk	595 94	
Special clerk hire	93 53	
Clerk in sanitary police office	426 66	
Registrar of records	1,653 21	
Clerk to registrar of records	4,659 64	
	<hr/>	\$19,233 36

County of Kings :

Commissioners	\$1,484 00	
Assistant sanitary superintendent ..	1,911 29	
Clerks to assistant sanitary superin-		
tendent	1,959 38	
Deputy registrar of records	1,146 77	
Sanitary inspectors	4,777 40	
Contingent expenses	126 20	
Interest	1,217 42	
	<hr/>	\$12,622 46

Extraordinary Expenses—General :

Miscellaneous expenses	\$4,092 49	
Special clerk hire	4,756 19	
Law expenses	2,083 00	
Expenditures at Seguine's Point ..	17,791 24	
	<hr/>	\$28,722 92

Extraordinary Expenses—County of New York :

Assistant inspectors	\$13,644 12	
Special clerk hire	547 02	
Miscellaneous expenses	6,047 23	
Hospital expenses	16,559 16	
Disinfecting expenses	21,912 29	
	<hr/>	\$58,709 82

Extraordinary Expenses—County of Kings :

Assistant inspectors	\$4,302 39	
Miscellaneous expenses	419 20	
Hospital expenses	16,066 16	
Disinfecting expenses	2,686 00	
Street cleaning	966 50	
Interest	1,163 16	
	<hr/>	\$25,603 41

Fund for cleaning streets in New York, under chapter 876	\$2,451 75
Extraordinary expenses—town of Yonkers	100 00
Extraordinary expenses—town of Newtown.....	252 00
Extraordinary expenses—town of Flushing.....	100 00
Temporary loan, account.....	41,583 60
	<hr/>
	\$222,669 26
	<hr/>
Total receipts.....	\$321,902 66
Total disbursements.....	222,669 26
	<hr/>
Balance on hand	\$99,233 30
	<hr/>

BENJ. F. MANIERRE,

November 16, 1866.

Treasurer.

Metropolitan Sanitary District, ss.

Benjamin F. Manierre, being duly sworn, doth depose and say: That the accompanying report contains a detailed statement of all moneys received and paid out by the "Metropolitan Board of Health," and a "detailed statement of the manner of expenditures" of such money, from the organization of said Board in March to the 15th day of November, 1866, and further saith not.

BENJAMIN F. MANIERRE.

Sworn before me, this 30th day }
of November, 1866. }

S. C. HAWLEY,

Chief Clerk Police.



APPENDIX.

“A.”

OFFICE OF THE SANITARY SUPERINTENDENT, }
METROPOLITAN BOARD OF HEALTH, Nov. 1st, 1866. }

To the Secretary of the Metropolitan Board of Health :

I beg respectfully to submit the following report of the duties which I have performed as sanitary superintendent since my appointment on March 5th, 1866, and those performed by the sanitary inspectors and other officers and employees of the board under my immediate direction.

Previous to the appointment of sanitary inspectors, the time was occupied in examining the various contracts for street-cleaning, for removing dead animals and offal and night-soil, and in investigating the manner in which the provisions of said contracts were fulfilled. The investigation showed that the street-cleaning contract, and that for the removal of dead animals and offal, were most imperfectly performed. The contracting parties in both instances were very deficient in energy and fidelity, the number of their employees was far below that necessary to the performance of their work, while their horses and carts, boats and other appliances, were, as a general rule, inadequate in number, and miserable in character.

On March 26th, 1866, a plan was laid before the board by which the city of New York was divided into seven (inspection) districts, and the city of Brooklyn into three. The latter was subsequently divided into five. It was contemplated to assign one inspector to each of these districts, and the object in the division was to make the different districts equal, not in extent of area, but in the amount of labor to be required of the inspector. The lines were fixed, therefore, principally with reference to the character of the population and their occupation.

The limits of the districts were as follows :

FIRST DISTRICT.

Commencing at pier No. 1, North river, and proceeding up Battery place to Broadway, up Broadway to Canal street, through Canal street eastward to the Bowery, down Bowery to Catharine street, down Catharine street to East river.

SECOND DISTRICT.

Commencing at pier No. 1, North river, proceeding up Battery place to Broadway, up Broadway to Canal street, through Canal street westward to North river.

THIRD DISTRICT.

Commencing at Catherine Ferry, proceeding up Catherine street to Bowery, up Bowery and Third avenue to Fourteenth street, eastward to East river.

FOURTH DISTRICT.

Commencing at pier No. 42, North river, proceeding eastward through Canal street to Bowery, up Bowery and Third avenue to Fourteenth street, westward to North river.

FIFTH DISTRICT.

North by Forty-second street, east by East river, south by Fourteenth street, west by North river.

SIXTH DISTRICT.

That portion of the city north of Forty-second street and east of Sixth avenue.

SEVENTH DISTRICT.

That portion of the city north of Forty-second street and west of Sixth avenue.

On March 14, 1866, Dr. J. T. Conkling, of Brooklyn, L. I., reported for duty, he having been appointed Assistant Sanitary Superintendent for that city. He was at once assigned to duty, as such, to take charge of such sanitary inspectors as might be appointed by the Board to perform duty in Brooklyn, and to perform such other duties as belonged to the executive office of the Board in that portion of the Metropolitan sanitary district.

On the 12th and 26th of March, fourteen (14) sanitary inspectors reported for duty, having been duly appointed by the Board, viz:

Dr. J. H. Emerson,
Robert Newman,
A. Blaisdell,
Moreau Morris,
F. H. Colton,
J. R. Bird,
J. M. Allen, Jr.,

Dr. James L. Brown,
W. F. Deming,
E. H. Janes,
Guido Furman,
Fowler Prentice,
S. N. Fisk,
J. W. Baker.

Six (6) of these, Drs. Allen, Baker, Bird, Colton, Fisk and Prentice, were instructed to report to Assistant Sanitary Superintendent Conkling, for assignment to duty in Brooklyn; and eight (8), viz: Drs. Emerson, Newman, Blaisdell, Morris, Brown, Deming, Janes and Furman, were assigned to New York. In each city, one inspector was assigned to duty at the offices respectively of the Superintendent and Assistant Superintendent, as special inspector. Dr. J. H. Emerson was selected for this duty in New York, Dr. J. M. Allen, Jr., in Brooklyn. Their duties were to inspect, at once, any matter of special urgency which might come to the knowledge of the Superintendent or Assistant Superintendent, or which required special familiarity with the business of the central office.

Under the general rules, which the Board of Health had adopted for the guidance of their inspecting officers, the latter were especially instructed, by circulars issued from the office of Superintendent, to "familiarize themselves, without delay, with the sanitary condition of their respective districts; to forward to the Superintendent, semi-weekly, written reports on such nuisances found in their district, as in their opinion, demanded especial and immediate attention, giving situation and number of premises, the owner's name, and a brief but distinct description of the nuisance itself; to particularly indicate such streets, or parts of streets as were especially neglected and filthy; to pay special attention to tenement houses; to diligently search therein for local causes of disease, especially in over-crowding, in the lack of proper ventilation, drainage and light, and, if possible, to indicate in their reports the remedy for such deficiencies, when found. Whenever individual cases of illness were met with, which, in the opinion of the inspectors, should, either for the good of the patient, or that of his neighbors, be removed to hospital, they were directed to effect such removal, if possible, by advice and assistance given to the friends of the patient, and failing in this, to report the circumstances at once to the Superintendent."

Under these instructions the inspectors entered upon their difficult and responsible duties with the utmost promptness and fidelity, qualities which have, with one or two unfortunate exceptions, characterized their conduct from that day to this. The duties which they were thus called upon to perform were frequently most disagreeable and sometimes even dangerous, and the opposition and even abuse with which they often met, was most discouraging.

At first their reports were prepared in the form of letters, in each of which were described all the nuisances which had come to their notice. These reports were duly laid before the Board at its regular meetings, accompanied with a report or communication from the Sanitary Superintendent stating generally the duties performed by the inspectors, and making such recommendations or calling attention to such other matters as he deemed of importance to the Board. It was soon found, however, that great inconvenience arose from having many and various nuisances existing on different premises, and for which different parties were responsible, reported in the same document. Under the advice of the counsel of the Board, therefore, a proper blank form (Blank Form No. 1, Complaint and Proof) was prepared, by means of which each nuisance should be reported on a separate paper, which could be conveniently used or filed away by itself or with other papers referring to the same case. A large number of these blanks were printed, and, from time to time, distributed to the different inspectors, accompanied by additional instructions to the latter, which were prepared under the advice of the counsel of the Board, who also met the inspectors in conference, and explained to them still more fully their duties and responsibilities in a legal point of view.

ADDITIONAL INSTRUCTIONS TO INSPECTORS.

CIRCULAR NO. 11.

* * * "Reports should contain the name and position of the person making it, the date when any matter reported was inspected, the streets and avenues, if any, between, and the city, town, or village in which the same is situated; how many lots the same is upon, the names of the several owners, tenants, and occupants of each, so far as ascertainable,—reports should specify what part of the thing reported upon is on each lot, and (except in case of the regular general reports of inspectors and upon which no order of the board is to be founded), there must be a separate report, on a separate blank for each thing and lot reported upon, except that when one building or business owned, tenanted, or occupied by the same person covers several lots, only one report need be made; and in cases where it will facilitate the understanding of the thing complained of, a simple diagram of the premises should be sketched with a pen on the margin of the report. Care must be taken to secure accuracy in reporting owners, tenants, or occupants. In

regard to each and every nuisance reported upon, the officer making the report should state his opinion, that it is 'dangerous to life' and 'detrimental to health.'" * * * *

This latter point has always been especially insisted upon as essential to full compliance with that provision of the health law (section 14), which says, that the board may take and file among its records what it shall regard as a sufficient proof to authorize its declaration, that the same, to the extent it may specify, is a public nuisance or dangerous to life or health.

In addition to the regular duties thus imposed upon the inspectors, it was also made incumbent upon them to promptly investigate and report upon any special complaints, which might be referred to them by the superintendent. By order of the board a book was placed in each precinct station-house in the city, in which citizens were invited to enter complaints of nuisances, and a "central complaint office" was established as a part of that of the superintendent, where complaints could be made either in person or by letter, and to which the various complaints entered at the precinct station-houses were forwarded daily. Here all complaints were supervised, assorted, and thence referred to the inspecting officers of the districts in which the nuisances complained of were said to exist. This office was placed under the immediate control of Colonel Bartram, under whose systematic and efficient management it became a most valuable source of information.

The sanitary company of the Metropolitan Police Department, under the command of Captain B. G. Lord, composed of thirty-four (34) of the police force, selected for their reliability and their peculiar fitness by reason of previous education and experience, continued, as before, their sanitary work, and lent prompt and efficient co-operation to the inspection department, while they also represented, in great measure, the executive. They were particularly valuable in detecting unwholesome meats and other articles of food offered for sale, and in pointing out many nuisances, with which they had become familiar.

Under the system thus adopted, reports were soon received at the rate of about fifteen hundred (1,500) per week. These were carefully examined in the office of the superintendent, with the advice and instruction of the attorney of the board. Such as were found to be properly prepared were at once forwarded to the board for its action, while such as were found deficient in any particular were returned to their respective authors for correction.

It soon became evident, that the number of inspecting officers was very inadequate. The extent of each district was so great that months must elapse before the inspector would be able to discover and report upon the various existing causes of disease. In view of the threatened approach of the cholera it was deemed of the most vital importance that a great deal of this work should be accomplished within a month or two.

There were, therefore, appointed thirty-seven (37) "clerks," whose duty it should be to assist in the work of inspection. They were, with few exceptions, medical men. They reported for duty on various dates from March 30th, 1866, to the first of May 1866 (inclusive).

Eight (8) of them, viz.:

Dr. S. J. Holley,
Geo. S. Bretz,
N. W. Leighton,
W. Stewart,

Dr. James Harris,
C. C. Waller,
J. P. Colgan, and
J. L. Schenck,

were directed to report for duty to the assistant superintendent in Brooklyn; and twenty-nine (29), viz.:

Dr. Thoms H. White,
J. W. McLane,
W. F. Thoms,
J. J. Purcell,
L. Webber,
S. Churchill,
Horatio Paine,
A. W. Mac'ay,
L. A. Rodenstein,
E. B. Warner,
L. Sterne,
J. J. Randall,
T. R. Pooley,
B. F. Dawson,

Dr. C. W. Packard,
J. P. Garrish,
A. F. Mudie,
J. C. Acheson,
T. B. Stirling,
B. M. Keeny,
H. M. Field,
J. O. Farrington,
G. F. Jackson,
E. F. Martindale,
G. W. Hosmer,
J. R. Griswold,
O. G. Smith,
E. R. Pulling,

and Dr. Wm. McManus,

were assigned to duty at once in New York.

The original seven (7) districts were divided, each into four (4) sections, designated respectively A, B, C, D. Each of the original inspectors was instructed to devote his attention especially to section A of his district, while one of the newly appointed "clerks" or assistants was assigned to each of the other sections. The

"clerks" were instructed to report directly to the superintendent. It was hoped that with their assistance a complete survey of the district might be made within a few weeks, and with this view each inspector and assistant inspector or "clerk" was instructed to commence at once a detailed inspection of all premises within the limits of his section, square by square, and make semi-weekly reports, giving not only description of all nuisances found, but measurements of rooms, halls, yards, &c., and accompany the same by accurate diagrams. This, however, was found to be a task of such magnitude, and so much time was necessarily occupied in taking measurements, preparing diagrams, and in other details not immediately available in warding off disease, that even with the greatest industry, cholera, if it were to come at all, would be upon us before we were in any degree prepared to meet it. The idea of a detailed survey was, therefore, for the time abandoned, and all the inspecting officers were directed to push their investigations with all possible speed, with a view solely to the promptest detection of the immediate causes of disease. On this plan the inspections proceeded with far greater dispatch, and a mass of information was speedily laid before the board, to be the basis of action which should result in the removal from the city of nuisances of every description which would encourage the development of cholera or be the channel of its propagation.

The first, and at all times the most prolific cause of disease, was found to be the very insalubrious condition of most of the tenement houses in the cities of New York and Brooklyn. These houses are generally built without any reference to the health and comfort of the occupants, but simply with a view to economy and profit to the owner. The provision for ventilation and light is very insufficient, and the arrangement of water closets or privies could hardly be worse if actually intended to produce disease. These houses were almost invariably crowded, and ill-ventilated to such a degree as to render the air within them constantly impure and offensive. The drainage, of a very imperfect character, in many instances had no connection with the sewer, but consisted simply of surface gutters, by which all house slops, not unfrequently mixed with urine and even fecal matter, were conducted across the sidewalk and into the street. The privies were full and overflowing, and generally very inadequate in number, there frequently being but one for the accommodation of from sixty to a hundred persons. Some of these privies were mere wells, extend-

ing from the upper floors to the cellars, and provided with an opening and seat on each floor, but with no provision for water, and nothing to prevent the constant diffusion throughout the house of the emanations from the material accumulated below.

The basements were often entirely below ground, the ceiling being a foot or two below the level of the street, and were necessarily far more damp, dark and ill-ventilated than the remainder of the house. The cellars, when unoccupied, were frequently flooded to the depth of several inches with stagnant water, and were made the receptacle of garbage, excrement, and refuse matter of every description. The halls and stairways were usually filthy and dark, and the walls and bannisters foul and damp, while the floors were not infrequently used as privies from lack of other provision. The dwelling rooms were usually very inadequate in size for the accommodation of their occupants, and many of the sleeping rooms were simply closets, without light or ventilation save by means of a single door. The yards were piled with garbage and filth. In many cases the cellars were constantly occupied, and sometimes used as lodging houses, where there was no ventilation save by the entrance, and in which the occupants were entirely dependent upon artificial light by day as well as by night. Such was the character of a vast number of the tenement houses, especially in the lower parts of the city of New York and along its eastern and western border. Disease, especially in the form of fevers of a typhoid character, was constantly present in these dwellings, and every now and then, became in one or more of them epidemic. It was found that in one of these, twenty cases of typhus had occurred during the previous year.

The condition of things thus described depends by no means entirely upon the faulty construction of the houses. In fact, some which were originally constructed in the best manner were found in most insalubrious condition. To the filthy habits of the occupants, and especially to the indifference of the owners, is due the origin and continuance of these terrible sources of disease. The defects in construction were readily discovered and the remedy plain. But the reformation of the occupants and the discipline of the owners, while it was a matter of far greater importance to permanent improvement, was at the same time far more tedious and difficult.

Some of these tenements were owned by persons of the highest character, but they failed to appreciate the responsibility which

rested upon them. They were frequently entirely ignorant of the condition of their property, and either trusted its care to an agent who, of course, felt still less responsible, and whose duty was, in the main, to so manage the property as to be of the greatest pecuniary advantage to his employer; or leased them to "middle men," as they are called, who were generally irresponsible parties, with no interest in the property except its immediate profits, and who destroyed even its original ventilation, and aggravated its defects by having divided the rooms into smaller ones, and by crowding three or four families into space originally intended for one. The latter is frequently the case with houses not originally intended for tenement houses, but which are abandoned private residences, arranged not for the accommodation of many, but simply one family. These "middle men" hire these old houses for a term of years from the owner, who is glad to get rid of them until he is ready to tear them down and improve the property. The proprietors frequently urged the filthy habits of the tenants as an excuse for the condition of their property, utterly losing sight of the fact that it was the tolerance of such habits which was the real evil, and that for this they themselves were alone responsible.

Reformation among this class can, in my opinion, be made permanent only by forcing upon the owner of tenement property the responsibility of its management. Weekly, or, if necessary, more frequent inspections of every tenement house, from garret to cellar, should be made by the owner or other competent authority, who should exact from each tenant strict compliance with such rules as are necessary to the salubrity of a dwelling. And any tenant who persists in living in a manner detrimental to the health of his neighbors should no longer be allowed to remain. Such a system would soon improve the habits of the tenants, and the certainty of a weekly inspection would at least secure a vigorous cleansing at those times, which of itself would prevent the terrible accumulations of filth which are now a disgrace to so many property owners. The custom of employing one of the tenants to keep the halls, water closets and other public portions of these premises clean and in repair should also be made universal. It is in great measure due to this mismanagement and neglect of tenement property that so much labor and expense is forced upon the public for sanitary measures. They are the constant centres of disease. Through every epidemic, tenement houses have been the first resting place and permanent abode of cholera. They have

been so the past summer, and I urgently recommend that during the coming winter every effort be made on the part of the Board to enforce to the letter their ordinances regarding tenement houses.

Immediately connected with this subject but not at all confined to tenement houses, there came up that of deficient drainage. It was found that not only in tenement houses but in many private dwellings, some of them in the best portion of the city, the provision for carrying off the waste water and other fluids from wash-basins and slop-sinks was so insufficient and imperfect, as to render the occupation of such houses detrimental to health and dangerous to life. Many cases of disease were traceable to this cause. In many instances the fluids of the different sinks, wash-basins and water-closets on the successive floors were conducted by pipes, devoid of traps, to a common wooden drain of inadequate dimensions, running immediately beneath the basement floors of contiguous houses, and thence passing, sometimes into a street sewer, and sometimes into vacant lots of a low level, where accumulations resulted, from which offensive exhalations were constantly given off. The current through these drains was generally sluggish and frequently obstructed by accumulations of solid material, or by the decay and consequent breaking down of the drain itself. In the event of such accidents, collections of stagnant and offensive fluids took place beneath the basement floors, or in the cellars where such existed. The whole house thus became permeated with a disagreeable stench, the cause of which was not discovered until sickness or intolerance of the odor led to a thorough investigation. These drains were not infrequently furnished with "ventilators" consisting of flues connected immediately with the interior of the drain and thence passing up through the house and having openings in the various apartments, through which the gases resulting from decomposition below were diffused. The lack of proper traps gave rise to the same difficulty, the emanations from the stagnant contents of the drain finding their way up through the waste-pipes and escaping into bath-rooms and chambers by their upper extremities. Such are some of the more prominent nuisances found within the precincts of dwelling houses, where undoubtedly existed the most constant and virulent causes of disease.

The condition of the public streets engaged the early attention of the inspectors, and a large number of reports were received,

setting forth that not only were the streets not properly swept, but that in many parts of the city, especially in those inhabited by the poorer classes, the accumulations of days, and even weeks, remained unremoved. These accumulations consisted not only of ordinary sweepings, but mainly of house garbage—putrefactive animal and vegetable matter. The parties responsible for the daily removal of this material were most neglectful, and the evil resulting from this neglect was rendered far worse by the filthy habit prevalent among the inhabitants of many districts, of making the street a common receptacle for slops and garbage. On the sidewalk before many of the houses, were large garbage boxes, which, in consequence of the very irregular and imperfect manner in which they were emptied by the employees of the street cleaning contractors, had become worse than useless. They were allowed to become full to overflowing, and then left in this condition for days, until their contents becoming fluid from putrefaction, would leak through upon the sidewalk and street, while even the carts which finally received their contents were themselves nuisances, being without covers and generally leaky, defiling the pavement and tainting the atmosphere wherever they passed. This filthy condition of the street was, in many instances, much aggravated by the dilapidated condition of the pavement, and the faulty and uneven grade of the gutters.

The disposal of manure, removed from the numerous public and private stables in the city, was such as to create a nuisance of most offensive character. Instead of being taken at once beyond the limits of the city, it was collected in enormous quantities on vacant lots situated immediately on the North and East rivers, directly adjacent to thickly populated districts, where it lay for months, not only subject to the influences of the sun and rain, but constantly worked over and stirred up in its preparation for market.

The disposal of cattle and other animals for the subsistence of the city involved a succession of nuisances, upon which great labor has been spent. From the time when the animals were driven from Bull's Head, through the crowded thoroughfares, to be slaughtered in two hundred different places, throughout the most densely populated portions of the city, to the time when the meat was offered for sale in the crowded and unwholesome city markets, the whole system was conducted without regard to decency or health.

Immediately connected with this subject came that of the various establishments for fat-melting, bone-boiling, and gut-cleaning, which existed in various parts of the city, but especially on the North and East rivers, about the level of Fortieth street. The stench arising from these places was most offensive and deleterious, not only to those residing near them, but, under the influence of the wind, to the whole city—while it made the adjacent routes of travel, especially by the Hudson river railroad, most offensive. Not only did those living near these places suffer from the immediate effects of their emanations, but scarcely less from the tainted atmosphere of their own dwellings, rendered so by the frequent necessity of closing every door and window, in the attempt to exclude the intolerable odor.

Various manufactories were also found to be exercising a deleterious influence upon the public health. Among them, the manufactories of coal-gas stood so eminently conspicuous as to form a class by themselves. The almost daily floods of sulphuretted hydrogen which they poured over the city had long been a subject of bitter complaint, and the attention of the inspectors was at once directed to the discovery of its cause. At first, there was some dispute as to whether the latter was in the sewers, or at the gas-houses; but it was soon fastened upon the latter. As this subject, however, received the immediate and especial attention of the sanitary committee of the board, no further mention is needed here. In many other manufactories it was found that the nuisance arose from the fact that the proprietors had not availed themselves of the necessary appliances for the combustion or other neutralization of the offensive products, while others proved of such a character as to be unavoidably offensive and deleterious to the neighborhood, and their presence within the built-up portions of the city could not longer be tolerated.

The absence of sewers in many thickly populated parts of the city, as well as defects of construction in many existing sewers, gave rise to many nuisances complained of by the inspectors, which have received the especial attention of the engineer, as will be seen by his report.

Such were the great classes of nuisances which engaged the attention of the inspectors in the cities of New York and Brooklyn. The latter city labored under peculiar disadvantages as regarded street cleaning and the removal of night-soil. Almost no provision having been made for the former, excepting in particular

districts; and the latter being arrested by a quarrel between the contractor and the scavengers.

Besides the nuisances, however, which existed in such numbers, and were so general in their effect as to be readily classified, there was an endless variety of nuisances of lessor importance and more limited influence, which however, were no less offensive to the citizens of the immediate locality where they were situated. Many of them required only a moderate amount of expense and labor for their abatement, especially when the offence arose from mere accumulation of filth or from the fact that the drains, privies, &c., were out of repair. In many such cases it was only necessary to call the attention of the property owners to the evil to have it remedied, and it became customary for the superintendent, or in Brooklyn, for the assistant superintendent, to send a warning notice (Blank Form No. 2) to the party responsible. After the lapse of a reasonable time from the date of such notice a re-inspection was made, and if it was found that the nuisance had been abated no further action was taken in the matter; if otherwise, the original report was laid before the board to become the basis of an order, the service of said order to be followed by a second re-inspection; and provided the nuisance remained still unabated, the execution of the order under the direction of the police. Under this system a large number of nuisances were promptly abated by the owners of property, who not unfrequently expressed their gratification at having been notified, while in many other instances the more tedious course of forcible execution became necessary.

Soon after the organization of the corps of inspecting officers in the cities of New York and Brooklyn, the citizens of many of the country towns situated in the Metropolitan Sanitary District became desirous of benefiting by the action of the board, and the following plan in regard to them was recommended and adopted, viz.:

"That whenever the constituted authorities of any town or county present a written petition to the board of health for the appointment of a health officer to act under the direction of the board in the district which such authorities represent, that either a new officer be appointed, and the limits of his jurisdiction be fixed at that time, or, in case it be advisable, that the limits of some existing district be so extended as to include that referred to in the petition, in which case, of course, no new officer would be needed."

Under this plan, the following appointments were made, viz.:

Dr. N. K. Freeman, for West Farms; Dr. J. H. Pooley, for Yonkers; Dr. Isaac Lea, for Staten Island; Dr. P. Stewart, for Peekskill; Dr. J. D. Trask, for Astoria; Dr. W. D. Wood, for Jamaica; Dr. J. L. Hicks, for Flushing; Dr. Geo. Bayles, for Irvington on Hudson; Dr. G. J. Fisher, for Sing Sing; Dr. E. F. Mathews, for Rye.

The inspectors in the country districts were instructed to follow the same course as that in use in the cities, excepting that they were to make every reasonable effort to cause the abatement of any nuisance, by warning the responsible party, or by invoking the town authorities before reporting the same for the action of the board.

On the 18th of April, instructions were received from the board directing the superintendent to apply to the Hon. Secretary of War for the transfer of the "Battery Barracks," used during and since the war as a depot for troops *in transitu*, to the Board of Health, for use as a cholera hospital, in case such should be needed. The application was made, the transfer at once directed by the Secretary, and the barracks duly received from Brevet Major-General Van Vliet, U. S. A. A sufficient guard of police was stationed there, for the protection of the buildings and other property, until occasion should call for their use as a hospital. Application was also made to the Surgeon-General for the U. S. Transit Hospital, immediately adjacent to the "Barracks." The application was favorably considered, and the hospital received from Colonel Wm. J. Sloan, U. S. A., Medical Director, Department of the East.

At the same time a note was received from Mr. S. B. Halliday, Superintendent of "Five Points House of Industry," tendering to the board the use of the barrack situated in front of said institution. The barrack was accepted, and has proved valuable as a depot for disinfectants, of which a large amount was constantly used in that neighborhood.

On the 24th of April, Dr. Stephen Smith reported for duty, having been appointed by the board to prepare a plan of organization of a body of medical men and nurses, who, with the co-operation of the various dispensaries in the cities of New York and Brooklyn, should hold themselves in readiness to attend cases of cholera, wherever they occurred, and to take the care of such cholera hospitals as might be established. Dr. Smith immediately set about this work, and, after conference with the authorities of

the dispensaries, laid before the board a plan of organization. This, however, it never became necessary to adopt. The corps of inspectors and assistants, the number being once or twice slightly increased, has proved entirely sufficient, both for the care of cholera, wherever it has appeared, and for the management of hospitals.

On the 18th of April, the steamer "Virginia" arrived from Liverpool, and on the 20th was visited and examined, in accordance with a resolution of the board, passed April 19, that "the Sanitary Superintendent and Dr. Elisha Harris be requested, in connection with the Health Officer of the port, to make an immediate and thorough examination of the steamer 'Virginia,' which has recently arrived at this port from Liverpool, and her condition, and the persons on board said vessel who are sick, and report fully and particularly the facts to this board, at its meeting to-morrow, and also to report what action should be taken by this board in the premises." It was found that cholera had broken out among the steerage passengers on the 12th of April, when the vessel was about half way across the Atlantic; that the disease appeared in a malignant form, and that its virulence rather increased from day to day up to the time of the inspection. It was found to have been entirely confined to the steerage passengers, who were mainly Dutch, some of them from places where the disease had been during the winter, but the majority of them from healthy towns. No case had occurred among the cabin passengers, who seemed entirely at their ease about the disease, and expressed a strong desire to remain on board during quarantine, instead of being removed with the steerage passengers. At the time of the visit, measures were being taken for the transfer of the sick to a hospital ship, and of the well to a steamer fitted for their accommodation.

On the first of May, twelve (12) days from the arrival of the "Virginia," the first case of cholera occurred in the city of New York. It was in the person of a woman, some thirty-five (35) years of age, living in an old, ill-drained tenement-house, on the corner of Third avenue and Ninety-third street. She had been for some days occupied in spreading the contents of a privy about a vegetable garden, and this seemed to be the immediate exciting cause of the disease. The case was a violent one, and the patient died in a few hours. A post-mortem examination verified the opinion of the attending physician. The body was at once

removed from the house. The bedding, clothing, carpets, &c., which had been soiled by the evacuations of the patient, were burned. All the remaining tenants were removed to temporary quarters in the Battery barracks. A large quantity of chloride of lime and a preparation of carbolic acid was sprinkled in the rooms and halls of the house, and in the cellar and privy. The whole house was then thoroughly cleansed and whitewashed, and an efficient drain laid from the cellar, in which was found several inches of stagnant water. The house remained vacant for three (3) days, when the tenants were allowed to re-occupy it. The house has since then been free from the disease. Instructions were sent to Assistant-Superintendent Conkling as to the course to be taken, should similar cases occur in Brooklyn.

On the day following the occurrence of this first case, a second appeared, in the person of a woman at No. 115 Mulberry street, more than five miles from the first case, and, so far as could be ascertained, without any trace of communication therewith; while all the persons removed from the house where the first occurred, remained free from any symptoms of the disease, as also did the persons with whom they came into immediate contact at the Barracks. This second case recovered. The third case occurred four days later. On the 6th, a child died of the disease at No. 32 West Thirty-ninth street, about two miles and a half from the last case. After this, no case occurred anywhere within the limits of the Metropolitan sanitary district for nearly a month, nor was there hardly the usual prevalence of diarrhoeal diseases. On the contrary, the public health was in unusually good condition. Meantime, the Battery Barracks were being cleansed and thoroughly white-washed, and such repairs made and appliances introduced as should make it ready for the accommodation of patients, should it be required. This respite was also most valuable as affording opportunity for testing the qualities of inspecting officers. Some changes were made, and now and then, new appointments. Assistant inspectors C. W. Packard and J. W. McLane were promoted to the positions of sanitary inspectors in place of Drs. A. Blaisdell and Robert Newman. Drs. L. Applegate, W. V. White, Wm. H. Carmalt, Charles C. Lee and Frank Utter were appointed assistant inspectors to fill vacancies occurring from various causes. There were also appointed for special service in Brooklyn, Drs. J. S. Hawley, T. J. Moore, W. T. Swalin, J. L. H. Elmendorf, Wm. A. Thayer,

E. R. Barnes, W. J. Gilfillan, W. A. Mitchell, P. Pendergast, H. Saunders, J. J. Caldwell.

On the 15th of May, the Code of Health Ordinances, established by the Board, having been duly published, as prescribed by law, went into effect, and the inspecting officers were instructed to report all instances of their violation which came to their notice, and a proper blank (Form No. 3) was furnished them for this purpose. It was also now made incumbent upon the inspectors, in addition to their other duties, to re-inspect premises, regarding which orders had been issued by the Board, and report as to compliance or non-compliance on the part of those responsible. The blank for this report (Form No. 4) was in the form of an affidavit, and was in every instance of non-compliance sworn to by the inspector before being received. In the country districts, too, where no police force was stationed, the orders themselves were served by the sanitary inspecting officers, and such execution as became necessary, was accomplished through them under the direction of the Sanitary Superintendent, in accordance with a resolution of the Board passed May 9th. By a resolution passed May 16th, the Brooklyn inspecting districts were so extended as to include the towns of New Lotts, Flatbush, Flatlands, New Utrecht and Gravesend of Kings county.

About two-thirds of the reports now received each week, were upon matters, then for the first time brought before the Board, while the remainder were reports of re-inspection of premises, which had already been the subject of notice or order. A large amount of the work thus accomplished consisted in cleaning dirty houses, cellars, yards and privies, and in making sewer connections, or in otherwise improving the drainage of premises, especially of cellars, cess-pools and privy vaults. Many unwholesome cellars which were found to be unfit for human habitation, were vacated, and their further occupation prohibited.

On the 4th of June, the cholera again appeared. This fourth patient was an elderly and somewhat feeble gentleman, who died at 303 Broome street. No special cause was discovered. Three days later (on the 7th), a woman in the same house was attacked with and died of the disease. Besides having been subjected to the same local influences as the previous patient, this woman had washed the clothing soiled by the latter. On the 9th and 10th, and so on to the middle of the month, cases of greater or less severity occurred, at the rate of about one in twenty-four hours,

in localities widely separated from each other, and differing much in their apparent salubrity. It could already be seen, however, that the tendency of the disease was toward the filthier parts of the city.

In all these cases, disinfectants were promptly and freely used, though, necessarily, in a somewhat experimental manner, owing to a lack of accurate knowledge as to the peculiar power of disinfectants, the exact quantity required, the time for which it was necessary to subject articles to their action, and other practical details. It was, therefore, frequently thought best to burn soiled articles, especially beds, when saturated with discharges, lest the disinfection should be slow or imperfect.

A great variety of manufactured and patent disinfectants were brought before the Board or the Superintendent. Many of these were of but little value, while those which were thought worthy of a trial, were invariably found to depend for this efficiency upon the preponderance in them of some one or more of the well known and long tried disinfectants. A large quantity of chloride of lime, sulphate of iron and permanganate of potassa was, therefore, purchased; all articles, which abundant experience in hospitals, civil and military, and in private practice, had proved to be most efficient for ordinary disinfection, and the recent use of which abroad, had given evidence of a probable efficiency in arresting the progress of cholera. Measures were at once adopted for the constant use of these agents, and a plan was put in force by which every case of cholera, which could be discovered, should be promptly investigated, the patient cared for, and every possible advantage derived from disinfection. All persons were called upon to give intelligence, at once, at the nearest police precinct station, of any case of supposed cholera coming under their notice. The officer in charge of the station house was to notify the nearest sanitary inspector, and it became the duty of the latter to immediately investigate the case, report its true character by telegraph to the Central office, and render such professional aid, and, in cases proving to be cholera, direct such measures for preventing the spread of the disease as might be necessary. The office of the Superintendent was now constantly open, and for this purpose, four inspectors were detailed for extra duty at night and on Sunday, two of them being on duty at the office on alternate nights and Sundays. It was the duty of these officers to attend to any cases which might become known directly to them, or which might

be referred to them from a precinct station house, in case the officer in charge there had failed to find an inspector close at hand. It was also their duty to forward disinfectants, when necessary.

Under the direction of the Board, a disinfecting depot and laboratory was established in a building, No. 308 Mulberry street, immediately adjacent to the central office. This depot was placed under the immediate charge of Mr. James A. Christie, late a lieutenant in the army, and who had, before the war, a practical education as a druggist, assisted by Mr. J. B. Gardner, also a practical druggist. There were employed a number of assistants, all men who had served honorably in the army or navy. A sufficient number of horses and light covered wagons were purchased and kept in a neighboring stable, ready for use at any moment.

The laboratory was constantly used for experiments in the use and combination of various disinfectants, and the men for the proper and faithful application of the same. Both Mr. Christie and his men lodged in the building, and the latter were organized into various squads or reliefs, for the performance of duty in successive portions of twenty-four hours. This duty, as the season advanced, became of a most laborious and often hazardous character. The men were constantly visiting infected districts, entering the houses there, and handling bedding and clothes soiled by the dejections of cholera patients; they were obliged to disinfect all bodies dead of cholera and frequently to place them in coffins and remove them to the morgue. To the judgment and devotion of Mr. Christie and the fidelity of his men, is due the satisfaction which this branch of the business has given. The process of disinfection consisted in putting sulphate of iron, either in saturated solution, or dry, if used in wet places, in privies, in all vessels containing dejections from the bowels and in all places where such dejections had been deposited. An ordinary privy, six feet diameter and twelve feet deep, required twenty pounds of sulphate of iron for its thorough disinfection. All bedding and clothing soiled or used by the patient was boiled in a solution of permanganate of potassa, of the strength of one ounce to five gallons of water, for two hours, and then removed and reboiled in pure water. For purifying the atmosphere of the room without incommoding the patient, chlorine was gradually set free by adding sulphuric acid to a mixture of binoxide of manganese and chloride of sodium (common salt). In addition to these measures, chloride of lime,

or Labarraque's solution of chlorinated soda, was scattered freely about the floors of the rooms and halls of the house. Dead bodies were washed in solution of chloride of lime or chlorinated soda, and then packed in the coffin with chloride of lime.

A large quantity of common lime and charcoal dust was purchased and placed in the barrack at the "Five Points," to be used in the general disinfection of filthy localities, without reference to the occurrence of cholera. A number of horses and carts were hired and a sufficient number of men to furnish each cart with one helper beside the driver, to distribute the material. The force was placed under the immediate charge of officer Ezekiel Palmer, of the sanitary company of police, who has conducted this branch of the business throughout the season with great judgment and fidelity. The plan adopted was to pass through each street in the filthy portion of the city once, and in some instances twice, in each week, and sprinkle the disinfectants freely along the gutters and through the alleys and yards, and deposit a certain amount in each garbage box, privy and filthy cellar. Now and then a few cart loads of sulphate of iron and chloride of lime were used in the worst places. At first, the inhabitants misunderstood the operation, but it soon became popular and received their hearty co-operation.

Additional instructions were issued to the sanitary inspectors and assistants in the following general order :

"Sanitary inspectors and assistant inspectors will immediately investigate any case of supposed cholera reported to them at any hour by any officer of the Metropolitan Police. They will do what may be immediately necessary, professionally, and will give instructions as to the proper method of obtaining medical attendance from the dispensaries, or, if the case require it, of gaining admission to hospital, and furnish the necessary certificate. They will, at once decide what is necessary in the way of disinfection, and, if the parties be able to procure and employ the necessary articles themselves, the inspector will give them detailed instructions regarding the same, and make a re-inspection of the premises six hours later, to ascertain if his instructions have been carried out. In any case where the parties are unable to procure and employ the necessary articles, the inspector will at once apply at the nearest police station, and, through the officer in charge, telegraph to this office that disinfection is necessary at said premises, giving accurately street, number, room, etc. He will then re-in-

spect after six hours, and ascertain whether the proper action has been taken. Every inspector will promptly report his action at this office, in person, by telegraph, or in writing." * * * *

* * * * "Sanitary inspectors and assistant inspectors will keep watch of every case of cholera investigated by them until either recovery or death takes place, and will then promptly report the result to this office, in writing, if recovery; by telegraph, if death." The inspectors in the country districts were instructed to "forward to this office a written report upon each case of supposed cholera investigated by them, whether proved to be genuine or not, within twenty-four hours subsequent to said investigation."

The inspectors were also called together at the office of the superintendent once a week, and a more full understanding of their duties and responsibilities obtained, especially from various practical suggestions which occurred to them while in performance of their duty. They were especially instructed to make thorough inspection of premises where any cases of cholera occurred, to visit every family residing on or near said premises, and inquire carefully for any premonitory symptoms resembling those of cholera, and in finding such, to give advice, and, if necessary, treatment,—to extend such investigation throughout a block or as much further, as, in their judgment, the situation and circumstances required; to repeat these visits, from time to time, during the week or two following the occurrence of a case, so as either to be sure that no second case was to appear, or, in case of such appearance, to meet it promptly. Their labor now constantly increased, especially as it was learned that it did not come within the plan of the dispensaries to furnish medical attendance to the poor in cases of cholera. This additional duty was then assumed by the sanitary inspectors, so that whenever they found a case among the poor without medical attendance, they took charge of it, prescribed, saw that proper medicines were provided, and not unfrequently acted as nurses as well as physicians. As the number of such cases increased, the number of "clerks" or assistant inspectors was necessarily increased also, but in no case has the plan been departed from, nor has external aid been required.

The practical application of disinfectants was soon reduced to a simple system, which was followed in every case, and with apparently satisfactory results. Whenever a despatch was received at the central office, that disinfection was needed at any house, Mr.

Christie was notified, a wagon loaded with the requisite material, and the men at once sent to the spot. The officers and men of the police force were most prompt in their co-operation, and the disinfecting men were usually at their work on the premises, within an hour from the time at which the despatch was forwarded from the station house.

Throughout the month of June and the early part of July, the disease was confined entirely to New York, and nothing new was observed in its manifestations save an increasing tendency to locate itself in the lower and filthier portions of the city, especially in Mott, Baxter, Cherry, Mulberry, Jersey, and Madison streets, and to a limited degree, up town in filthy localities on the extreme eastern and western borders.

On the 8th of July, the disease appeared for the first time in Brooklyn. Two fatal cases occurred in the Twelfth ward. These were followed, from day to day, by others, the disease progressing at much the same rate and in the same manner as on its appearance in New York, the cases being at first isolated and in localities differing widely in salubrity, and then as their number increased, gradually becoming grouped in the low and dirty portion of the city. Assistant Superintendent Conkling at once put special inspectors on duty at his office at night and on Sunday, and adopted prompt measures for cleansing and disinfection, and, both on his own part and through his inspectors, made every provision for affording relief to the patients and for controlling the spread of the disease. His official report gives the remaining history of the operations under his immediate direction.

During the excessive heat of the 17th, 18th, and 19th of July, which produced such unusual mortality, the cholera decidedly decreased; but on the return of the temperature to its ordinary standard, it again increased, so that by the 22d, there was an average of about nine cases a day in the city of New York, and about the same number in Brooklyn.

In spite of the best efforts of the inspectors to take care of all patients at their own houses, so as to avoid the deleterious influence of transportation, there were not a few cases where, from the utter destitution of patients, or their abandonment by their friends and neighbors, this was impossible, and their removal to hospital became unavoidable. The "Battery barracks" were therefore opened for the reception of such, and, as appears in Dr. Conkling's report, a suitable building, appropriated for a similar purpose, in

Brooklyn. Assistant inspector, Thomas R. Pooley, was placed in charge of the "Battery barracks," who immediately put it in working order as a hospital, and received his first patient within twenty-four hours. It soon became evident, however, that this provision, although the accommodations were very large was not sufficient, inasmuch as many cases occurred toward the upper end of the island, transportation of which to the battery would be fatal. Accordingly on the 27th, the "Red House," an old unoccupied hotel, situated in a sparsely inhabited district, on Second avenue, between One Hundred and Fifth and One Hundred and Sixth streets, was appropriated by order of the board for use as a cholera hospital, and duly taken possession of by the superintendent. Assistant inspector Thomas A. White was put in charge, and under his management the premises were speedily cleansed and prepared for the reception of patients. Both these officers have conducted their hospitals in the most able manner, both with reference to the care of their patients and in the management of the business details.

At first, some dissatisfaction and fear was apparent on the part of those residing near the hospitals; but this soon wore off, especially as it was seen that those living in and employed about them did not suffer from cholera, but on the contrary enjoyed perfectly good health. The same was the case in the two hospitals in Brooklyn. Throughout the whole season, not an officer nor an employé at any of these four cholera hospitals, has had the disease. A few have had severe attacks of diarrhoea, which have readily yielded to ordinary treatment, and finally, every one who has been employed, has left the hospital in as good health as when they came. The most rigid cleanliness, and constant and careful use of disinfectants, have been enforced. All dejections were either received at once into vessels containing a sufficient amount of disinfectant (sulphate of iron), or the latter was immediately added. Soiled bedding or clothes were at once removed and put in soak in a solution of permanganate of potassa—one ounce to five gallons of water. The walls of the wards were always kept freshly white-washed, the wash containing a small proportion of chloride of lime, and the floors were frequently scrubbed with the latter and pans of the same placed in various parts of the rooms and halls. For further details I refer to the reports of the officers in charge.

By the 1st of August, the number of cases had increased to a daily average, in the city of New York, of from twenty-five to

thirty. The aggravating influence of insalubrious surroundings upon the infection, was now distinctly pronounced. Nearly all the cases occurred within localities notorious for filth and degradation.

The labor of the inspectors was now unremitting. Beside their regular inspection duties, they were constantly going, night and day, not only to the care of genuine cases, but to the investigation of three times as many false reports, the result of ignorance or fear. Many cases were without medical attendance, and these the inspectors took charge of, and when necessary, provided stimulants, ice, medicines and other necessities, at the expense of the board. Patients were not infrequently found in deep collapse at the first visit of the inspectors, requiring prolonged personal efforts on his part to bring on reaction and, if possible, save life. Each week exacted additional service from these officers, to all of which they have never failed to give prompt and cheerful response. It has now and then become necessary to make new appointments, to fill the places of those taken sick in this service, but no one has failed to resume his duty as soon as able, and no one asked for leave of absence during the emergency.

The modes of treatment pursued, were the same in the hospitals and in the hands of the inspectors. The various plans, which past experience had recorded as beneficial or were approved by the present acknowledged authorities, were adopted with varying success. The disease itself seems beyond control. The best results have been obtained from faithful persistence in alleviating the suffering and sustaining the strength of the patient, in the hope that the peculiar poison, whatever it may be, might exhaust itself before the vital force succumbed. How many cases were prevented by timely advice and judicious treatment of diarrhœa, it is of course impossible to say. Certainly, a vast number of attacks of this character subsided under the watchfulness of the inspectors, aided by the general distribution among the poor, of a simple diarrhœa mixture. The mixture so distributed was that suggested by Dr. Edward R. Squibb, and composed of laudanum, camphor, capsicum and chloroform. It was prepared in large quantity by Mr. Christie, in the laboratory of the disinfectant depot, and placed in the different police station-houses, to be subject to the order of inspectors, and to be given to the poor in small one-ounce vials bearing printed instructions for its use.

The disease continued at about the same rate up to the 4th of

August, from which date it slowly but steadily abated, until the 10th of October, when for the first time, the record showed no case of cholera reported in twenty-four hours. On the 11th, there were again two cases, and for several days subsequently one or two every twenty-four hours up to the 14th, when there was a second complete cessation, which has since that time been interrupted only by an occasional case at intervals of several days.

The present danger having apparently passed, the services of the assistant inspectors were gradually dispensed with, a number dropping their connection with the board on the 30th of September, and the remainder on the 15th of October.

The "red house" and "battery barracks" hospital were closed on the 29th of September and October 13th, respectively, and the disinfectant corps reduced to the smallest number, which could serve as a basis for re-organization, should occasion require it.

A number of cases of cholera have occurred during the season in the town of Newtown, on Long Island, in Mott Haven, Morrisania, and Portchester, in Westchester county, and a few on Staten Island. The remainder of the Metropolitan district, especially the portion of it on the Hudson river, has been entirely free from any evidence of the disease. One case occurred in Peekskill, in the person of a man just arrived from New York.

A great deal has been done in abating nuisances in all the towns of Peekskill, Greenburg, Ossining, Yonkers, West Farms, Rye, Astoria, Jamaica, Flushing, and Richmond county, through the watchfulness and energy of the local inspectors.

The plan of disinfection already described has given entire satisfaction as regards the dejections, clothing and other immediate surroundings of the patient; but, frequently, the recurrence of successive cases in tenement houses, showed that the power of such measures was too limited, and at an early date general fumigation of such buildings was resorted to, either with chlorine or sulphurous acid gas. The process was this: All tenants were removed from the house, being allowed to take out nothing more than the clothing then upon them. All the windows and chimneys were closed. The gas was then set free in quantity—if chlorine, by the addition of sulphuric acid to chloride of lime; if sulphurous acid, by the burning of sulphur in large, open pans supported by long iron legs. The men employed commenced the process on the upper floors and descended, leaving the pans in operation on the different floors, and finally closed the street door—the house

thus filled with the gas was left undisturbed for from eight to twelve hours. It was then opened and freely aired, and finally the tenants allowed to reoccupy. The first house treated in this manner was an emigrant hotel, in the lower part of State street. Three cases of cholera occurred in this house within a period of thirty-six hours, and a large number of the boarders were attacked about the same time with severe diarrhœa. The proprietors were notified that all guests must leave and the hotel be closed. This was promptly done. The house was then thoroughly fumigated with chlorine, and kept so for twenty-four hours, when it was opened and aired. It was then cleansed throughout, and the walls freshly whitewashed. At the end of ten days the hotel was reopened, and very soon crowded with lodgers. No case of cholera or other disease of any moment has occurred there since.

Subsequently to that, a large number of houses were fumigated after cholera had occurred in them. Sometimes chlorine was the agent, and at others sulphurous acid. They have proven equally satisfactory, though in far the largest number the latter was used. In the great majority of instances, fumigation has been followed by immunity from the disease. In a few, however, cases have occurred subsequently to the process, but they have seemed the result of renewed exciting causes. The evidence is strong that the adjuvants of cholera, such as impure air and improper food, which encourage the development into actual disease of the prevailing predisposition, and second, those direct agents of its propagation, such as the dejections of patients, can be controlled and even destroyed by a strict enforcement of cleanliness and prompt use of disinfectants; and the mortality may be restricted, to the minimum, which is due to the presence of the cholera poison proper. Our experience has given no clue to the existence of any antidote to the latter. If these conclusions are just, it must be inferred that while the cases of cholera, which have occurred the past season, have been of the severest and most unyielding type, yet that the infection has not been largely present. That the epidemic, if such it may be called (which might, if left unrestrained, have grown indefinitely), has had comparatively but a feeble foundation, and so has been more readily controlled. Further experience is necessary to prove that the means which have successfully combatted it this year will, in greater force, avail equally against a more virulent attack. The existence of a few cases still among us, and the more violent outbreaks of the disease in other

parts of the country, give ample warning that we must not be too confident, nor abate the vigilance and industry upon which depends the removal of such things as invite the pestilence and favor its growth.

I beg earnestly to recommend that the gentlemen who have served so faithfully as additional inspectors during the past emergency, and whose services have now been dispensed with, be recalled to their position early next spring, so that we may be still better prepared than we have been, should the disease again declare itself.

The amount of disinfectant material purchased during the summer is as follows :

Lime, barrels	4,200
Charcoal dust, barrels	1,400
Chloride of lime, lbs.....	94,839
Sulphate of iron (copperas), lbs.....	75,333
Permanganate of potassa, lbs	95
Sulphur, lbs	670

There now remains on hand :

Chloride of lime, lbs	2,450
Sulphate of iron (copperas), lbs.....	2,800
Permanganate of potassa, lbs	60
Sulphur, lbs	87

Very respectfully, your obedient servant,

ED. B. DALTON, M. D.,

Sanitary Superintendent Metropolitan Board of Health.

FORM 1.

TO THE METROPOLITAN BOARD OF HEALTH:

I, _____ holding the position of _____ in the
Metropolitan Sanitary District of the State of New York, do
report:—That on the _____ day of _____, 1866, I did
inspect, carefully, and personally examined the _____ situ-
ated _____ in the city of _____ and
found the facts to be as follows:

Signed,

Dated, _____, 1866.

FORM 2.

Office of Sanitary Superintendent,
 METROPOLITAN BOARD OF HEALTH,
 No. 301 Mott Street. }

NEW YORK,....., 1866.

To the Owners, Occupants, Lessees and Tenants of Premises
 No.

Your attention is called to the fact that an inspecting officer of
 this board has reported of
 premises No. in the city of

as in a condition detrimental to health.

The interests of the public health require that

and measures to this effect must be taken within days from
 the date of this notice, or the premises will be reported to the
 Board of Health as a nuisance.

Very Respectfully,

 Sanitary Superintendent.

FORM 3.

To the Metropolitan Board of Health:

I, holding the position of in
 the Metropolitan Sanitary District of the State of New York, do
 report:—That on the day of 1866, at
 in the city of did violate section
 of the Code of Health Ordinances of the Metropolitan
 Board of Health, in this, that:

Witnesses, {

Signed,

Dated, 1866.

FORM 4.

To the Metropolitan Board of Health:

I, _____ holding the position of _____ in
the Metropolitan Sanitary District of the State of New York, do
report:—That on the _____ day of _____, 1866, I
did inspect, carefully, and personally examined the premises
referred to in Order No. _____ dated, _____ and found
that said order had _____ been complied with.

Sworn to before me, this }
day of _____ 186 . }

Signed,

Dated,-----, 186 .

—

Dr. E. B. DALTON, *Sanitary Superintendent*:

Sir—I have the honor to submit the following report of the
“Red House” Hospital, from July 27, 1866, inclusive:

Total number of patients admitted.....	64
Of these were discharged, cured of cholera	17
do do do cholera morbus	1
do do do colic	2
do do do diarrhœa.....	4
do do do diarrhœa and per- tussis	1
do do do ebrietas.....	2
do do do relieved of epilepsy	2
	— 29
Of the deaths there were from cholera.....	33
do do do delirium tremens	1
do do do marasmus.....	1
	— 35
Of those who died from cholera, there were in the stage of collapse when admitted.....	22
Of these twenty-two (22) cases, there died within six hours after admission	13
Within ten hours after admission	9
Of the remaining eleven (11) deaths from cholera, there were from exhaustion, in collapse coming on after admission	5

From secondary fever and its complications	6
Of the seventeen (17) cases of cholera that terminated favorably, there recovered from the stage of collapse.	6
From a state bordering on collapse	3
From the second stage, characterized by vomiting and purging, with rice-water dejections	8

The above statistics show the proportion of deaths among the cases of cholera to have been sixty-six per cent, a mortality which compares not unfavorably with that of previous cholera epidemics. With regard to the sex and nativity of the cholera patients, they were as follows:

Males	20
Females	30
	— 50
Of Irish nativity	25
German nativity	16
American nativity	6
English nativity	2
French nativity	1
	— 50
	=

The ages of the patients ranged from ten months to sixty-six years.

From so limited a number of cases, especially of such as offered any prospect of recovery, it is hardly possible to arrive at any just conclusions concerning the value of the remedial measures employed.

Stimulants, calomel, morphine, administered by the mouth and by hypodermic injection, quinine, enemata of brandy in combination with an infusion of green tea, and the bisulphide of carbon, were the principle agents which have been tried. Alcoholic stimulants have never proved of any avail, when administered by the mouth, with the view of bringing on reaction from collapse, and their use was speedily abandoned, except in small quantities, after reaction, when the patient appeared to be passing into a typhoid stage, and occasionally, during the early stages of the disease. Of brandy administered by injection into the bowels, in combination with a strong infusion of green tea, the experience of this hospital affords proof of a beneficial effect. Such injections were employed in nearly every case, and seldom failed to moderate the frequency of the stools. The record of the cases shows that as

an adjuvant, to control the excessive purging, they are of sufficient importance to warrant their further trial.

Quinine, in doses of five grains repeated every fifteen minutes, was exhibited in a few cases. Two patients reacted after collapse, and, passing through a mild secondary fever, recovered. In these cases forty-five grains of quinine were given within five hours.

Calomel was employed in the majority of cases, and the testimony of the hospital with regard to its use, is favorable. It was exhibited in three cases, after the plan of Dr. Davis, of Cincinnati, in small doses, in combination with astringents, frequently repeated, the patients recovering. In eleven other cases that terminated favorably, it was given in doses of from two to five grains, repeated at short intervals until a change was observed in the appearance of the stools. Excluding the treatment of twenty-two cases, which were admitted in deep collapse and died soon afterward, calomel, either alone or in combination with astringents, was administered in twenty cases, of which fourteen recovered. Of the six fatal cases, five died after reaction during the sequelæ.

The sulphate of morphia, in combination with small doses of calomel, was used in many cases to allay vomiting and restlessness, and with advantage. To control the cramps, the hypodermic injection of morphine proved very effectual in every case in which it was employed, a single injection of from five to ten minims of Magendie's solution often giving permanent relief.

The bisulphide of carbon was administered in a few cases of deep collapse, in doses of five drops repeated every half hour, but without any good results.

Ice and cold water were freely given in every stage of the disease, and contributed greatly to the comfort of the patients.

Sinapisms to the epigastrium, chloroform and creasote were employed to allay vomiting, and in a few cases, appeared to have a salutary effect. External heat was applied to the surface of the body during the cold stage, and was thought to be of benefit. In the post-mortem examinations which were made, appearances were found similar to those which have been described as characteristic of cholera.

The intestines presented a considerable amount of vascular injection of the arborescent variety, varying in extent, but more marked in the lower portion of the small intestine.

The solitary and agnimated glands were enlarged and prominent from effusion within their sacs. Beneath the microscope,

exfoliation of the epithelium was observed. The contents of the intestine were generally fluid, and of a character resembling the rice-water dejections. The stomach, in two cases, presented appearances similar to the intestine; in others, the mucous membrane appeared pale, and in one case mamillated. The liver, where not previously diseased, was healthy. The gall bladder was found distended with inspissated bile, but otherwise healthy in appearance. The spleen was normal, except in one case, complicated with cirrhosis of the liver, where it was very much enlarged, and nearly equal in size with that organ. The kidneys were found to be more or less congested, and, on microscopic examination, the epithelium of portions of the tubes was exfoliated. Albumen in the urine was present during the consecutive fever in a few cases that recovered. The bladder was contracted and nearly empty. The lungs in those cases which died during collapse, appeared healthy; in other instances they were found more or less congested. The heart was normal.

The brain was examined in one case that proved fatal on the seventh day. The vessels of the dura mater and pia mater, and the great sinuses were very much congested, and on action through the substance of the hemispheres, the punctated injection was very marked.

The record of this hospital affords additional and gratifying proof of the efficacy of prophylactic measures. Not a single case of contagion occurred within the hospital or immediate neighborhood, with which there was unavoidably more or less intercourse. Nor has the disease been conveyed to any more distant locality by the physicians, employees and discharged patients, or by the removal of bedding and clothing belonging to cholera patients.

This immunity is to be attributed to the frequent and thorough use of disinfecting measures, the admirable situation of the buildings used for hospital purposes, and their construction, which permitted the freest ventilation.

Soon after the hospital was opened, a separate privy-vault was constructed for the dejection of cholera patients.

This vault was disinfected twice daily, with about ten pounds of the sulphate of iron. Every stool was disinfected before being emptied, and the vessel thoroughly cleansed with a solution of chlorinated soda. A similar solution, or a solution of the sulphate of iron was kept in every vessel used by a patient. A solution of the permanganate of potassa, one ounce to five gallons of water,

was used for the bedding and clothing, and where practicable, such articles were afterward boiled.

The entire premises were frequently white-washed, and the floors scrubbed with a solution of chlorinated soda. Chloride of lime was sprinkled freely around the buildings, and basins filled with it were kept in the wards.

It is perhaps worthy of note, that during the first two weeks, and previous to the construction of a separate privy-vault for choleraic dejections, all the employees and medical officers were attacked with diarrhoea, which in a few cases was accompanied with nausea and vomiting. Afterward this tendency to diarrhoea ceased, but whether on account of the construction of a separate privy-vault for the dejection of patients, or because we had become less susceptible to the influence of the cholera miasm, or whether it was a mere coincidence, I will not express an opinion.

The disinfectant department connected with the hospital deserves mention. It is the right arm of a cholera hospital. To be able at a moment's notice, to remove a patient from a crowded and filthy locality, and at once stamp out the disease by thorough fumigation and disinfection, has proved, during this epidemic, the most effectual mode of controlling the disease, and its true antidote.

The following figures will show the amount of labor performed by this department of the hospital from August 1 to Sept. 29 :

Number of localities disinfected..... 121

Number of patients removed to the hospital..... 51

The number of localities disinfected, it will be observed, is more than double that of the patients removed to the hospital, showing the efficacy of disinfecting measures in the absolute suppression of the disease. In a very few localities, situated under the most unfavorable hygienic conditions, the disease has reappeared, rendering necessary a repetition of the disinfection.

The district, to which the operations of this department have been confined, comprises the upper end of the Island, above Sixtieth street, and a few localities within the villages of Portchester, Morrisania, and Mott Haven.

On Saturday, Sept. 29, the hospital was closed. The new privy-vault had been previously disinfected and filled in with earth. The buildings were thoroughly fumigated, and the entire premises were left in a better condition than they presented on their first occupation.

In closing this report, I would call attention to the efficient co-operation afforded by medical assistants, Drs. Wainwright, Randall, and Pratt, and the faithful and fearless manner in which they have discharged their duties.

Very respectfully, your obedient servant,

THOMAS H. WHITE, M. D..

*Assistant Sanitary Inspector,
in charge of "Red House" Hospital.*

NEW YORK, Oct. 6, 1866.

"HOSPITAL, BATTERY BARRACKS," }
NEW YORK, Oct. 15, 1866. }

Dr. E. B. DALTON, *Sanitary Superintendent* :

Sir—The assistant sanitary inspector in charge of this hospital, most respectfully presents the following report :

The whole number of persons admitted from the 24th July to 15th October, 1866, inclusive, was 206, of which number there were :

	July.	August.	Sept.	October.	Total.
Natives	7	23	17	2	49
From Ireland	13	64	23	4	104
England	3	5	6	2	16
Belgium	1	1	1	..	3
Sweden	2	4	..	..	6
Germany .....	..	11	7	1	19
Canada .....	..	1	..	..	1
Portugal .....	..	1	..	..	1
New Brunswick .....	..	1	1	..	2
Scotland .....	..	1	..	..	1
China .....	..	1	..	..	1
Denmark .....	..	..	1	..	1
Australia .....	..	..	1	..	1
Spain .....	..	..	1	..	1
Total	26	112	59	9	206

Diseases of those admitted.

1866.	Cholera Asiatic.	Cholera morbus.	Cholera infantum.	Diarrhea.	Dysentery "acute."	Chronic diarrhœa.	Chronic dysentery.	Typhoid fever.	Total.
July	15	8	.....	2	1	.....	.....	.....	26
August	85	18	.....	5	1	2	1	.....	112
September	43	12	1	1	1	.....	.....	1	59
October	6	.....	1	1	1	.....	.....	.....	9
Total.....	149	38	2	9	4	2	1	1	206

The following is a statement of admissions, discharges and deaths, exhibiting the number of natives and foreigners, males and females, for the same period.

Admissions, discharges and deaths.

1866.	ADMISSIONS.					DISCHARGES.					DEATHS.				
	Males.	Females.	Total.	Natives.	Foreigners.	Males.	Females.	Total.	Natives.	Foreigners.	Males.	Females.	Total.	Natives.	Foreigners.
July.....	14	12	26	7	19	2	1	3	1	2	5	5	10	2	8
August.....	53	59	112	23	89	24	23	47	13	34	31	36	67	11	56
September	30	29	59	17	42	17	14	31	9	22	12	18	30	9	21
October.....	4	5	9	2	7	7	6	13	3	10	3	2	5	1	4
Total.....	101	105	206	49	157	50	44	94	25	68	51	61	112	23	89

The accompanying is a classified table of the different ages of the patients when admitted.

1866.	9 months.	1 year to 5 years.	5 years to 10 years.	10 years to 15 years.	15 years to 20 years.	20 years to 25 years.	25 years to 30 years.	30 years to 35 years.	35 years to 40 years.	40 years to 45 years.	45 years to 50 years.	50 years to 55 years.	55 years to 60 years.	60 years to 65 years.	65 years to 70 years.	Total.
July.....	.....	.....	2	2	3	1	3	6	2	2	2	1	.....	1	1	26
August .....	.....	.....	3	2	4	20	23	23	10	10	7	6	3	1	.....	112
September.....	1	2	3	2	.....	12	9	12	7	5	2	1	1	1	1	59
October .....	.....	1	.....	.....	.....	1	3	1	.....	1	1	.....	.....	1	.....	9
Total.....	1	2	9	6	7	34	38	42	19	18	12	8	4	4	2	206

*Statement of the mortality from July 24 to October 15, 1866,
showing the cause of death.*

1866.	Cholera Asiatic.	Cholera infantum.	Typhoid fever.	Acute dysentery.	Pneumonia.	Chronic dysentery.	Total.
July.....	10	.....	.....	.....	.....	.....	10
August.....	64	.....	1	1	1	.....	67
September.....	28	1	.....	.....	.....	1	30
October.....	5	.....	.....	.....	.....	.....	5
Total.....	107	1	1	1	1	1	112

Statement of the diseases of those discharged.

1866.	Cholera Asiatic.	Cholera morbus.	Chronic diarrhoea.	Dysentery.	Diarrhoea.	Acute dysentery.	Typhoid fever.	Cholera infantum.	Total.
July.....	1	1	.....	1	.....	.....	.....	.....	3
August.....	31	12	.....	.....	3	1	.....	.....	57
September.....	17	10	2	1	.....	.....	1	.....	31
October.....	6	3	.....	1	2	.....	.....	1	13
Total.....	55	26	2	3	5	1	1	1	94

As will be seen by referring to the statistical table, the mortality, in all cases of genuine "Asiatic cholera," was about fifty-five per cent. So far as I can learn, this rate will compare favorably with that of the other hospitals in this city and Brooklyn, and is not as large a mortality as occurred in some previous epidemics. Of the fatal cases, the majority were in collapse when admitted, and died very shortly after.

Very respectfully,

THOS. R. POOLEY, M. D.,

*Assistant Sanitary Inspector,
in charge of Hospital "Battery Barracks."*

"B."

OFFICE ASST. SAN. SUPT. MET. BOARD OF HEALTH, {
COURT HOUSE, BROOKLYN, Nov. 1, 1866. }

E. B. DALTON, M. D., *Sanitary Superintendent*:

Sir—I received, on the 10th of March last, my appointment as assistant sanitary superintendent of the Metropolitan Board of Health, and at once proceeded to enforce such regulations of the Board as applied to this portion of the district.

The legislation of the common council of this city had left its sanitary condition in such a state that there was urgent necessity for immediate action. The work was found most embarrassing.

Streets.—By the law, the aldermen were compelled to advertise annually, for proposals for cleaning the streets by wards, and to give the contract to the lowest bidder. In a few of the wards, contracts had been given to irresponsible persons—in others, the fund appropriated for the purpose had been expended, while in the most, no contracts had been made. The aldermen hesitated, for some reason, to make necessary contracts, or to enforce those made, and assuming that the control of all matters relating to the health of the city had passed from them to the Metropolitan Board of Health, month after month elapsed during which the streets were filthy in the extreme. By an arrangement by which those in the worst condition were reported from time to time to the aldermen, partial cleaning was accomplished; but even during the prevalence of cholera there was no ward in which the streets were thoroughly cleaned.

Night-soil.—It was also found that a contract had been awarded to a firm, for a period of ten years, for the removal of night-soil. Previous to 1866, the city had paid one thousand dollars per month for the removal of night-soil and dead animals. By the terms of this agreement, the contractor had the entire monopoly of the work—he was to perform the labor in a specified manner, and was permitted to charge the citizens twelve cents per cubic foot for its removal. The contract is dated December 11, 1865. In January,

a number of men, formerly engaged as scavengers, procured from the supreme court an injunction, restraining the contractors from working, on the ground that the common council had no right to make such a contract. Hence, when this Health Board came into existence, no man could legally move night-soil from the city. After a time the contractors induced the withdrawal of the injunction, and the scavengers have worked in connection with the contractors. The work has, however, been done in violation of almost every specification of the agreement—as to facilities for the work, the obtaining of permits, use of disinfectants, price charged, etc., etc.

Dead Animals.—The same contractors pay the city one hundred dollars for the dead animals per year, and remove them.

Inspectors.—On the 12th of March, Drs. Allen, Colton, Prentice, Bird, Fisk and Baker reported at this office for duty as inspectors. The city was divided into five sanitary districts, and an inspector appointed to each. One inspector was detailed for special duty. The investigation of complaints made by citizens received special attention. At the same time a system of house to house inspection was instituted.

In April, six assistant inspectors were added to the force. To date, each house of nine hundred and six blocks has been visited and carefully inspected as to its sanitary condition; resulting in the making of eight thousand six hundred and sixty-eight complaints which have been forwarded to your office.

Cholera.—During the month of June and earlier part of July, there were cases of sickness whose characteristics simulated those of cholera, but the first distinctive case occurred July 8th. Its increase then was not rapid and was mostly confined to localities in different sections of the city where there was the greatest amount of filth. Its principal field was in the southwestern part of the city, in the twelfth ward, on a tongue of low land projecting into the bay, with streets made by earth drawn from a distance, leaving the intervening spaces depressed, to become the receptacle of stagnant water and various forms of filth. Many of the dwellings are built on these spaces, surrounded by foul pools of water, some on piles with water under the dwellings. These sunken lots have, in many instances, been partially filled by garbage and other substances liable to decompose, and on this, as a foundation, dwellings have been erected. In the construction of the streets, no attempt was made to establish a system of drainage by culverts

or otherwise, while the grade of the streets is such that the drainage upon the surface is very imperfect.

In such a location, with surroundings so detrimental to health, was a population whose powers of life were greatly reduced by the atmosphere in which they lived, whose poverty compelled the use of improper and often deficient food, and whose habits, in very many instances, were dissolute. In this ward, two hundred and eighty-eight of the eight hundred and sixteen cases occurred.

The progress of the disease will be shown by the following table:

Weeks Ending		Cases.
July	13	14
	20	42
	27	53
Aug.	3	83
	10	161
	17	132
	24	80
	31	47
Sept.	7	81
	14	28
	21	44
	28	25
Oct.	5	5
	12	5
	19	12
	26	3
	31 (5 days)	1
Total		<u>816</u>

The following table shows the number of cases by wards:

Wards.	Cases, July.	Cases, August.	Cases, Sept ^r ber.	Cases, Oct.	Total, 4 Months.
First	--	9	1	1	11
Second	6	14	4	3	27
Third	3	4	1	1	9
Fourth	3	--	1	--	4
Fifth	5	18	7	1	31
Sixth	10	32	17	--	59
Seventh	4	7	1	--	12

Wards.	Cases, July.	Cases, August.	Cases, Sept'ber.	Cases, Oct.	Total, 4 Months.
Eighth	7	27	3	--	37
Ninth	17	15	63	--	95
Tenth	5	20	7	--	32
Eleventh	6	76	9	--	91
Twelfth	77	189	21	1	288
Thirteenth	--	1	--	--	1
Fourteenth	--	3	3	--	6
Fifteenth	--	--	--	--	--
Sixteenth	1	1	5	--	7
Seventeenth	2	2	6	4	14
Eighteenth	2	1	--	--	3
Nineteenth	1	1	2	--	4
Twentieth	--	11	--	--	11
Town of Flatbush	1	24	27	14	66
Flatlands	1	--	--	--	1
New Lots	1	2	--	--	3
Newtown	--	3	--	--	3
Gravesend	--	--	1	--	1
Total	152	460	179	25	816
	==	==	==	==	==

Cholera Hospital, Hamilton Avenue.—The destitution and suffering among those having cholera were such that a public hospital was opened for their reception July 22d. On that day the police, by direction of the Board of Health, seized two buildings on the corner of Hamilton avenue and Van Brunt street. They were occupied on the following day by cases removed from Walcott street, in the Twelfth ward.

The following is the report of Dr. Wm. Henry Thayer, physician in charge of the hospital :

BROOKLYN, *Sept. 30, 1866.*

J. T. CONKLING, M. D.,

Asst. Sanitary Supt., Metropolitan Board of Health.

Sir—I have the honor to report that a hospital was opened in the Twelfth ward, at the corner of Hamilton avenue and Van Brunt street, for the reception of cholera patients, of which I was put in charge by your order on the 25th of July last, with Dr. P. L. Schenck as assistant physician.

The building was the best that could be obtained to meet the

emergency. It is a large brick structure of two stories and a basement, having two sides open to the streets, with numerous windows. The first floor was used for the hospital ward, and consisted of one large room, about one hundred and ten feet by seventy feet. A portion was curtained off for females, and ventilation was not obstructed. The whole place was thoroughly cleansed, and the doors and windows were kept always open. The basement was used as a dispensing depot for chloride of lime and sulphate of iron for that quarter of Brooklyn. The adjoining building was used as a house of refuge for families removed on account of being attacked with cholera; and a number of families, especially of children, were taken in during the season.

One hundred and twelve patients were received into the hospital up to the 6th of September, when it was closed. Of these eighty-four were cases of cholera, and twenty-eight of cholera morbus, cholera infantum, dysentery and diarrhœa.

Of the eighty-four cases of cholera there entered :

In the 1st stage 13—of whom 12 recovered, 1 died.

In the 2d stage 57—of whom 7 recovered, 50 died.

In the 3d stage 14—of whom 7 recovered, 7 died.

Of the twenty-eight cases of other diseases, twenty-five recovered and three died; the fatal cases were of cholera infantum, in the children of parents dead of cholera. Patients that recovered, passed, with few exceptions, through all the stages. Fatal cases terminated chiefly in the stage of collapse; of the fifty that entered in collapse and died, forty-three died in that stage, and seven in the third stage.

I assume a division of cholera into three stages, which appears to be natural. The stages are very distinct in character, and mark material changes in the general condition, in indications for treatment and in the prognosis. The first stage is marked by the peculiar vomiting and purging and cramps; the second is the algid stage, during which the former symptoms cease; the third is the stage of reaction or "secondary fever," which all pass through who survive the second. The term "collapse" describes the whole of the second stage; no definite line can be drawn between partial and complete collapse; the onset of the algid symptoms marks its commencement, and its progress is rapid and constant until death or reaction.

The first stage, reckoning from the beginning of vomiting, is

usually short—a few hours only elapsing before the failure of the circulation, which sometimes, indeed, appears almost simultaneously with the vomiting. The stage of collapse is commonly longer, but is proportioned to the length of the first, coming to a fatal termination earlier when the first stage has been short. The third stage exceeds in length the aggregate of the first and second ; extending to several days or a week, and when attended with serious complications it may run to a much longer period. The duration of cholera in fifty-two cases was satisfactorily obtained, as follows :

Average length of cases fatal in second stage, 31 hours ; shortest case, 8 hours ; longest, 75 hours.

Average length of cases fatal in third stage, 9 days ; shortest case, 5 days ; longest, 20 days.

Average length of cases that recovered in third stage, 7 days ; shortest case, 4 days, longest, 11 days.

Dysentery, parotitis, abscess, pleuro-pneumonia and parturition, occurred as complications during the third stage in some of the cases.

The following conclusions in regard to treatment are derived from the experience at the hospital :—absolute repose is indispensable. In the first and second stages all nourishment is hurtful. An unlimited allowance of water is objectionable, increasing the vomiting and not relieving the thirst. Small bits of ice or spoonfuls of water, repeated every five or ten minutes, are the most grateful, and do not increase the vomiting. Stimulants are useless during collapse ; they are not absorbed and they aggravate the vomiting. They are not more effectual in this stage when given by the rectum. External heat rarely has any influence in restoring the warmth of the surface while collapse is deepening ; it is useful in assisting the returning warmth when the second stage is passing into the third. Friction has no effect in restoring warmth, and is objectionable as interfering with the desirable repose. Sinapisms help to relieve cramps or abdominal pain, and to excite the circulation in the extremities. Upon reaction from collapse, nourishment becomes necessary, and should be given in concentrated liquid form, in small quantities frequently repeated. Stimulants are also required at this period, in quantity according to the state of the circulation and the force of reaction. In case of the continuance of gastric irritability into the third stage, so that food cannot be retained, it may be given by the rectum. A sufficient amount of beef juice, with the addition of brandy if necessary,

may be given by the enema for many days, to meet the wants of the system. Convalescence is marked by the abatement of febrile action, a return of appetite, and improvement of the secretion, and indicates a fuller diet. Cholera in the first stage is amenable to active treatment, and such remedies as arrest the discharges and excite a new action in the portal circulation have a good effect; even during the commencement of collapse in some cases, the system is susceptible to the influence of medicines; but in most cases the period for successful medication is brief. The natural tendency is to a fatal issue. A large proportion of the cases were too far advanced at their admission into hospital to afford any encouragement of successful treatment, and in some cases no medicine was given.

During the first two weeks of the hospital, cases were treated variously—with Squibb's mixture of camphor, chloroform and opium, with chloroform and opium, brandy and capsicum, camphor and chloroform, acetate of lead, mineral acids, friction and external heat. After this time nearly every patient in the first or second stage was treated with calomel. Of thirteen patients admitted in the first stage, twelve were treated with calomel exclusively and recovered; no calomel was used in the remaining case, which was fatal in six days. Of fifty-seven admitted in the second stage, twenty-three were treated with calomel, of whom six recovered, three exhibited partial reaction, and four passed out of collapse and died in the third stage. Calomel was also used in three cases admitted in the third stage, in whom the choleraic discharges continued. Only one patient recovered of those admitted in the first or second stage, who was treated without calomel. It was used in various doses, from one to ten grains; if in small doses it was continued every hour till some appearance of improvement or the approach of death; if in ten grain doses, every hour till thirty or forty grains had been taken. The method preferred was the use of the largest doses. The immediate effect was commonly the arrest of the discharges, and where improvement took place it was usually manifested in about twelve hours by the commencement of dark brown or green stools, with sensible relief of epigastric disturbance and thirst, and returning warmth. Reaction was generally gradual. Diarrhœa in the third stage was not more severe in cases thus treated than in those where no calomel was used; and it was quite as troublesome in those who had one grain doses as in those who had ten grains.

Only five patients had mercurial stomatitis, and those only in very mild degree and without salivation.

The other remedies used were not employed extensively enough to give a valuable experience ; none of them gave encouragement for retaining them, and they were abandoned in favor of calomel. Camphor was given in several cases, in five grain doses dissolved in chloroform, repeated four or five times an hour without effect. Acetate of lead was used, sometimes with temporary relief of vomiting and purging, but with no sensible effect on the essential character of the disease. Brandy gave no relief. Capsicum only increased the epigastric uneasiness. Squibb's mixture sometimes produced a temporary advantage. Ten patients had no medicine whatever.

The third stage demands nourishment, tonics and stimulants. Diarrhœa was treated with vegetable astringents, or the tincture of the sesqui-chloride of iron, or with opiate enemata. When there was a marked typhoidal condition and delirium was present, sulphate of quinia was used with good effect.

Were it consistent with the character of the present report, I should take the opportunity to present more fully the scientific history of the disease, and submit the views of its pathology which have been derived from my experience in this and former epidemics. I have, however, deemed it proper to confine myself to a concise statement of facts.

Very respectfully, your obedient servant,

WM. HENRY THAYER, M. D.,

Assistant Sanitary Inspector,

Metropolitan Board of Health.

Cholera Hospital, City Park.—The spread of the disease along the water front of the city into the Second, Fifth and Eleventh wards, rendered the transportation to the Hamilton Avenue Hospital most hazardous to the lives of the patients. No suitable unoccupied building being found in the proper location, the common council gave permission for the erection of buildings for hospital purposes in the city park. These structures were completed and occupied August 15th.

The following is an abstract of the report of Dr. W. F. Swalm, assistant inspector in charge of this hospital :

The hospital remained open until October 1st, a period of forty-nine (49) days, and during that time twenty-eight (28) patients were received. Of these eighteen (18) were affected with cholera.

Of the cholera patients, eleven (11) died, the most of them having been admitted in collapse. The majority were of the lower class of society, from ill-ventilated apartments in crowded tenement-houses, wretchedly poor and filthy, and addicted to the use of intoxicating liquors.

Of the cases that died in collapse the duration was from twelve (12) to fifty (50) hours from the time of attack, and from five (5) hours to two (2) days from the time they were received into the hospital. Two died from consecutive fever. Those that recovered, were in the hospital from two (2) to eighteen (18) days.

The main treatment was ten grains of calomel given at first, followed every hour by one grain until some change is experienced, either the cessation of the vomiting and purging or a change in the character of the dejections. Rarely over thirty grains were given. Artificial heat to surface and extremities, sinapisms to calves of legs and wrists for cramps, small pieces of ice by the mouth, and teaspoonful-doses of green tea, cold, if retained. Afterwards, if the stomach was not irritable, beef-tea in conjunction with the ice was mostly relied on. Injections of green tea and brandy, half an ounce of each, were given with good results in stopping the purging, but not the vomiting, in all cases. When the purgations were bloody, gave injections of laudanum and gum-water, twenty-five drops of the former to an ounce of the latter after every evacuation, no matter how often, and benefit was obtained.

As soon as reaction was established, beef-tea and stimulants were given in small quantities, and often repeated, gradually increasing as the stomach would bear them. Should the bowels become loose a teaspoonful of paregoric was generally sufficient; if not, it was repeated.

County Institutions.—The disease has prevailed to some extent among the inmates of the county institutions at Flatbush. During the months of August, September and October, forty-seven (47) patients were admitted to the Kings county cholera hospital from the alms house, nursery and hospital, as follows :

	Cases.
August	8
September	25
October.....	14
	—
Total	47
	==

It broke out in the county jail, July 31st, and within a short time there were thirty-six (36) cases. A change of diet, disinfection and fumigation, checked it. The duration of the epidemic was thirteen (13) days. In the penitentiary it was more severe. I append the report of Dr. J. L. Zabriskie, physician in charge :

J. T. CONKLING, M. D., *Asst. Sanitary Supt.,*
Metropolitan Board of Health :

Sir—I have the honor to submit the following report of the recent epidemic of cholera among the inmates of the Kings county penitentiary :

The building in question is situated in the Ninth ward of the city of Brooklyn, on the range of hills which divides the city from the town of Flatbush. The locality is remarkably healthy, and for a period of eight years no epidemic had prevailed in the institution, previously to the recent outbreak. The building is large, well lighted and ventilated, and a model of cleanliness and good order ; the strictest discipline being at all times maintained with regard to sanitary matters. The prison cells are placed within the two wings (male and female respectively), each cell opening by means of an iron grating into the main hall or court. Each cell has, in addition, a separate flue connected with the roof, making the ventilation as perfect as possible. There are no water-closets nor sinks in the building—each cell is supplied with a night pail for the reception of excrement, which is carried out in the morning, emptied, and thoroughly washed before being returned to the prison. The diet, although coarse in quality, is generally wholesome and nutritious.

The first case of cholera occurred on the 22d of May in one of a gang which had been employed in digging a trench for water-pipes through soil soaked with excrementitious matter, but did not prove fatal. Others of the same gang suffered severely with diarrhœa.

The second case occurred on the 21st of July, just two months after the first ; the third on the 24th, and from this time the epidemic was considered as established and every effort was made to combat it. Every day a few new cases occurred, until the 2d of August, when for twenty-four hours no new cases were reported. On the night of the 3d of August, thirty-eight cases occurred of the most malignant character. The disease attacked those who were convalescent from previous seizures, hurrying them off in a

few hours. Twenty-two deaths occurred in the succeeding twenty-four hours, and the remainder followed in rapid succession. In view of this terrible state of affairs it was decided to vacate the building as speedily as possible. Tents were immediately procured and placed at convenient distances outside of the prison enclosure. By order of the district attorney, fifty of the prisoners confined for slight offences were discharged. The male prisoners were all removed to the tents on Sunday, August 5; the females, the day following. Among the males but two new cases occurred after the removal was effected. Five assistant keepers and one female nurse who slept within the building were subsequently attacked; three of the keepers and the nurse died. The last case was that of the nurse who died on the 18th of August, so that if we exclude the first case, which occurred two months before the second, the epidemic lasted twenty-eight days. The whole number of cases reported during this period was eighty-seven, of which number sixty-seven proved fatal. The number of prisoners in the institution at the outbreak of the epidemic was two hundred and seventy-five.

From the first, thorough disinfection was practiced. Chloride of lime and Labarraque's solution were freely employed; each night-pail, after being washed, was supplied with a pint or more of a solution of sulphate of iron before being returned to the building. The clothing and bedding of all the patients were thoroughly boiled, as was also the clothing of all prisoners arriving after the outbreak of cholera. Into the drains leading to the cess-pools, several pails full of sulphate of iron solution were daily poured; lime was freely used about the premises—in a word every precaution was taken to make thorough disinfection.

No method of treatment appeared to be of the slightest avail. The earliest symptoms were met by camphor and opium; by hypodermic injections of morphine or atropine; by astringents administered both by the stomach and by the rectum; by camphor dissolved in an equal weight of chloroform; by injections of brandy and strong green tea; by aromatic sulphuric acid, and, finally, by calomel, with what success let the death record witness.

Immediately after the removal of the prisoners, the building was thoroughly fumigated with sulphurous acid gas and green wood smoke; it was then cleansed and whitewashed. The prisoners reoccupied it on the 28th of August, since which time the health of the institution has been excellent. Very respectfully,

Oct. 23, 1866.

JOHN L. ZABRISKIE, M. D.

Location of Cholera.—While there were many isolated cases, in different sections of the city, the disease had its special centres, where most of the cases occurred. In the twelfth ward, the poison manifested its greatest intensity in Walcott, King and Dikeman streets, between Van Brunt and Richards streets, and in Luqueer street, near Hicks. In the eighth ward, in Twenty-First street, between Third and Fourth avenues. In the first ward, in Furman street. In Willoughby street, corner of Raymond, in the eleventh. In East Baltic street, near Hoyt, in the tenth. In Sandford street, in the seventeenth. Each of these centres, excepting that in the eighth ward, is very filthy. In the majority of instances the disease attacked those predisposed to sickness. The robust and temperate escaped. In cases that could be traced, there were found exhaustion from over-work, or want of proper diet, a pre-existing tendency to diarrhoea, or such a palpable violation of the laws of digestion, by the immoderate and improper use of food or drink, as to prepare the system for the reception of the poison.

Contagion.—There is abundant evidence to prove that the disease is communicated by means of the discharges. In numerous instances, where there was not sufficient attention given to their immediate disinfection and removal, the number of cases increased. A man died at No. 95 Water street on the 1st of October. His discharges were thrown, without disinfection, into the privy, and his soiled clothing washed. On the 3d, a lad in the same family died. On the 5th, his mother, who had nursed him, died after eighteen hours' sickness. These facts being known, the beds were burned, the privy and house disinfected, and the soiled clothing soaked in a chlorine solution and subsequently boiled. The disease was checked at once. At No. 36 Furman street, a woman died on the 7th of August. A second woman washed the body of deceased and removed her soiled clothing to No. 74 Washington street, for the purpose of washing it. She died August 11th, after a few hours' sickness.

Cleaning and disinfection.—In those wards in which the disease prevailed, the gutters of the streets were repeatedly cleaned and limed. In the twelfth ward, in a greater part of the sixth, in portions of the second, fifth and eleventh, the cellars and yards of the houses were cleaned and limed, and the privies disinfected. When a case of cholera was reported at this office, an inspector immediately visited the case, and, if confirmed, he gave directions that the vessel used for the discharges should contain a solution

of the sulphate of iron; that a quantity of the same solution should be thrown into the water closet or privy; that chloride of lime should be placed upon plates in the room and halls; that the soiled bed clothes should be soaked in a solution of Labarraque's fluid, and afterwards boiled for several hours, and that all beds soiled by the discharges should be burned, or rendered innocuous, if valuable.

Results of Disinfection.—It is believed that the cleaning and disinfection prevented the spread of the disease. This would not have been the result in so marked a degree if the epidemic influence had been stronger. It did prevent a local atmosphere being formed so impregnated with the poison as to reach and influence to any great extent other portions of the city. In State street, between Columbia and Furman streets, are fifteen houses, containing one hundred and twenty-three families. The houses were filthy the yards and cellars contained many loads of decaying rubbish, the privies were full and extremely offensive. On the 10th of August, a man died of cholera at No. 18. At once a force of men thoroughly cleaned and disinfected the entire premises. This was repeated in a few days. Not another case of cholera occurred. In the eastern district of the city is a row of buildings containing some two hundred negro families. The houses were crowded to excess and extremely filthy. On the 4th of August, a man died, in one of these houses, of cholera. Immediate and thorough cleaning and disinfection were directed, and there was not another case. In East Baltic street, near Bond, was a cluster of houses containing many families. There were a number of cases, even after disinfection. Two of the houses were then fumigated with sulphurous acid gas and subsequently whitewashed throughout. No cases occurred in them after this.

It will be seen from these statements of facts, that, although the distinctive nature of the cholera poison remains undiscovered, and no agent is yet known that is remedial when the disease is fully developed, yet it is possible to prevent it by proper sanitary measures.

Respectfully submitted,

J. T. CONKLING, M. D.

Assistant Sanitary Superintendent

Metropolitan Board of Health.

“C.”

METROPOLITAN BOARD OF HEALTH, {
BUREAU OF VITAL STATISTICS, Nov. 15, 1866. }

To the Secretary of the Metropolitan Board of Health :

In accordance with the nineteenth section of the sanitary act, and in obedience to the Board of Health, the registrar of vital statistics submits the following report of marriages, births, deaths, and the causes of death ; with a statement concerning the organization and purpose of this bureau.

The order directing the establishment of this bureau was made by the Metropolitan Board of Health at its first meeting, March 5, 1866. In compliance with a requisition from the Board, the archives hitherto pertaining to the office of the city inspector were, on the 5th day of March, transferred to the new bureau of vital statistics. By a similar order and a like requisition a branch of this bureau was established in Brooklyn, and all records and vital statistics pertaining to the bureau of vital statistics in the health office in that city were transferred, and a deputy registrar was placed in charge of the branch, and directed by the Board to transmit to the central bureau in New York a copy of his weekly reports. A statement of the condition and quantity of the archives so transferred to the branch in Brooklyn will be found in the report of the deputy registrar, Dr. R. C. Stiles.

The peremptory requirements of the Board, immediately upon the adoption of the sanitary act, and the suddenness with which the task of organizing a bureau of vital statistics devolved upon the registrar, left no time for hesitation or delay in deciding upon a general plan and such methods as the principles of sanitary science had already established ; hence, whatever merits and whatever success shall attend this plan and these methods, are plainly attributable to the well defined truths of that science as related to civil government in its care for the lives, the health, and the social protection of the people.

Defects and wants in this department of the sanitary service will

continue to be discovered, while progressive experience and the constantly increasing intelligence and demands of society will both require and render practicable new and enlarged inquiries, registries, studies, and useful applications in vital statistics and hygiene. Therefore the governing purpose in all which the bureau has undertaken has been to recognize this necessity for progress in the development and direct application of sanitary science.

Society no longer submits its destinies to the superstitious doctrines of chance in any of the great affairs and events of human existence. The State and the municipality open their account current and ledgers of the life, lineage, death and the causes of death of the people, in order that the laws of healthy existence and social welfare may be elucidated, while public registration is made of three great landmarks which nature has placed in the pathway of life. And if, in the transactions of trade and transfer of lands and estate, the civil government justly demands the formalities of deeds, of title-proofs, covenants and solemn oaths, and, the literal registration of them, how much more and with what exactions shall the requirements of society be enjoined in regard to its care, study and public records of man in his birth and lineage, his family, his offspring, and his death. And such records as society and the science of life now require need to be both accurate and exceedingly complete; and most justly do they demand that whoever is most intimately, officially, or responsibly concerned in the individual and the event to be registered, shall aid in whatever is required to render the vital registration most complete and useful. In this spirit and with these principles in view, yet by methods and with uses that have been devised for daily necessities in the care of public health, the organization and duties of the bureau have been directed. And no higher compliment can be paid to the enlightened spirit that is beginning to pervade all classes of the people in regard to life and health, and the public duties connected therewith, than the testimony which we now bear to the fact that the people and the press have spontaneously and heartily aided in giving effect to every method.

The actual nature and amount of these records will be understood by an inspection of the subjoined summary of them :—

Aggregate number of names on the Registers at the end of each year, 1798-1865, and for the nine months, ending September 30, 1866.

Years.	AGGREGATE NUMBER.			Names upon the register
	Persons married.	Births.	Deaths.	
1798	-----	-----	5	5
1799	-----	-----	-----	-----
1800	-----	-----	-----	-----
1801	-----	-----	43	43
1802	-----	-----	843	843
1803	-----	-----	1,134	1,134
1804	-----	-----	725	725
1805	-----	-----	-----	-----
1806	-----	-----	-----	-----
1807	-----	-----	-----	-----
1808	-----	-----	424	424
1809	-----	-----	-----	-----
1810	-----	-----	-----	-----
1811	-----	-----	40	40
1812	-----	-----	2,503	2,503
1813	-----	-----	2,335	2,335
1814	-----	-----	1,961	1,961
1815	-----	-----	2,511	2,511
1816	-----	-----	3,000	3,000
1817	-----	-----	2,384	2,384
1818	-----	-----	3,005	3,005
1819	-----	-----	3,178	3,178
1820	-----	-----	3,522	3,522
1821	-----	-----	3,422	3,422
1822	2	-----	3,212	3,214
1823	-----	-----	3,551	3,551
1824	-----	-----	4,224	4,224
1825	-----	-----	4,920	4,920
1826	-----	-----	4,961	4,961
1827	-----	-----	5,139	5,139
1828	-----	-----	4,818	4,818
1829	-----	-----	4,501	4,501
1830	-----	1	5,522	5,523
1831	-----	-----	6,347	6,347
1832	-----	1	10,257	10,258

AGGREGATE NUMBER.

Years	Persons married.	Births.	Deaths.	Names upon the register.
1833	-----	-----	5,689	5,689
1834	-----	1	8,907	8,908
1835	-----	1	7,096	7,097
1836	-----	-----	8,068	8,068
1837	-----	-----	8,626	8,626
1838	-----	-----	7,911	7,911
1839	-----	2	7,910	7,912
1840	-----	-----	8,469	8,469
1841	6	-----	9,093	9,099
1842	84	-----	9,154	9,238
1843	10	-----	8,659	8,669
1844	2	-----	8,890	8,892
1845	6	-----	9,652	9,658
1846	8	1	11,411	11,420
1847	670	1	11,273	11,944
1848	870	2	11,280	12,152
1849	12	-----	16,972	16,984
1850	8	-----	10,332	10,340
1851	14	5	14,029	14,048
1852	44	-----	15,490	15,534
1853	6,584	9,287	21,979	37,850
1854	11,028	17,076	28,437	56,541
1855	7,988	13,371	24,448	45,807
1856	7,524	15,603	21,748	44,875
1857	7,998	17,685	22,811	48,494
1858	7,188	12,133	23,269	42,590
1859	6,298	8,128	22,745	37,171
1860	8,172	5,998	24,760	38,930
1861	5,690	9,869	24,525	40,084
1862	5,816	7,637	23,150	36,603
1863	6,436	6,373	26,617	39,426
1864	6,444	5,689	25,792	37,925
1865	5,630	5,244	25,767	36,641
1866	3,730	7,240	21,150	32,120
Total	98,262	141,348	624,596	864,206

The law providing for the public registration of marriages and births in the State of New York was enacted by the Legislature in 1847, and in 1853 another act provided specific and stringent regulations for such registration in the city of New York. The foregoing table exhibits the varying and meagre results of the good purpose of all this legislation. It is manifestly necessary that, among a free people, where compulsory regulations are not easily executed, arbitrary power must be substituted by special intelligence and adequate incentives. Whatever gain has been made in the completeness of these two branches of registration, since April last, is to be attributed to the increase of intelligence and incentives. Tables to be found in this report exhibit the rate of steady increase observed in this registration the present year.

The registration of deaths in New York city dates back to the year 1803. Cemetery records, and the returns of certificates of death through the cemetery-keeper or sexton, until within the last twenty-three years supplied the information of deaths to the City Inspector. And until the adoption of new regulations, last spring, serious irregularities prevailed. The frequent application for transcripts of death records, which had never been registered, led to inquiries that confirmed and solved the question of incompleteness in the public registry.

The incompleteness of the registration of marriages and births requires no comment. The practical importance of such public records has not been generally appreciated.

The Metropolitan Board of Health has heartily sustained its bureau of vital statistics, in maintaining that, "considered physically, the main objects of a correct civil registration of births, deaths and marriages, is to *aid in* disclosing the causes of disease ; that, considered legally, the object is to provide means of tracing descent and proving personal identity ; and that, considered politically, it is to assist the government in arriving at correct conclusions with regard to measures of internal economy, employment, &c."

In the plan of organization, and in the methods adopted in this bureau, every effort has been made to attain the first of these three objects of vital statistics, viz.: to aid in disclosing the causes of disease ; and this seemed so important that it was at once determined to seek its attainment by direct and permanent agencies connected with every form, requirement, inquiry and record. The second object—completeness of the legal records—being wholly in harmony with the great purpose of life-saving, as also

are the social and political purposes of registration, the methodizing of the plan was facilitated by unity of design in all the forms and headings for the records and blanks pertaining to the bureau. This brief remark upon the higher uses of vital statistics will sufficiently explain the plan and purposes of this first report of the bureau.

The forms of certificates, or "returns," here subjoined, show precisely what amount and kind of information is asked and obtained by the plan of registration adopted by authority of the Board of Health.

RETURN OF A MARRIAGE TO THE
BUREAU OF VITAL STATISTICS,
MET. BOARD OF HEALTH, STATE
OF NEW YORK.

1. Full name of Groom,-----
2. Place of Residence,-----
3. Age, -----
4. -----
5. Occupation, -----
6. Place of Birth,-----
7. Father's Name,-----
8. Mother's Maiden Name,-----
9. No. of Groom's Marriage,--
10. Full Name of Bride,-----
- Maiden Name if a Widow,--
11. Place of Residence,-----
12. Age, -----
13. -----
14. Place of Birth,-----
15. Father's Name,-----
16. Mother's Maiden Name,-----
17. No. of Bride's Marriage,--

N. B.—At Nos. 4 and 13 state if Colored; if other races specify what. At Nos. 9 and 17 state whether 1st, 2d, 3d, &c., marriage of each.

New York,-----186 .

We, the Groom and Bride named in the above Certificate, hereby certify that the information given is correct, to the best of our knowledge and belief.

----- (Groom.)

----- (Bride.)

Signed in Presence of

and -----

RETURN OF A MARRIAGE TO THE
BUREAU OF VITAL STATISTICS,
MET. BOARD OF HEALTH, STATE
OF NEW YORK.

1. Full name of Groom,-----
2. Place of Residence,-----
3. Age, -----
4. -----
5. Occupation, -----
6. Place of Birth,-----
7. Father's Name, -----
8. Mother's Maiden Name,-----
9. No. of Groom's Marriage,--
10. Full Name of Bride,-----
- Maiden Name if a Widow..
11. Place of Residence,-----
12. Age, -----
13. -----
14. Place of Birth,-----
15. Father's Name,-----
16. Mother's Maiden Name,-----
17. No. of Bride's Marriage,--

N. B.—At Nos. 4 and 13 state if Colored; if other race, specify what. At Nos. 9 and 17, state whether 1st, 2d, 3d, &c., marriage of each.

New York,-----186 .

We, the Groom and Bride named in the above Certificate, hereby certify that the information given is correct to the best of our knowledge and belief.

----- (Groom.)

----- (Bride.)

Signed in Presence of

and -----

This Certificate and Return of Marriage must be made to the Registrar of Records, 301 Mott street, New York, within 10 days after the marriage ceremony.

[Extract from the Statutes.]

"It shall be the duty of clergymen, magistrates and others, persons who perform the marriage ceremony in the city of New York, to keep a registry of the marriages celebrated by them, which shall contain, as near as the same can be ascertained, the names and surnames of the parties married, the residence, age and condition of each; whether single or widowed."

[From § 13, chap. 74, *Session Laws*, 1866.]—"And for every omission of any person to make and keep the registry required by the acts referred to in this section, and for every omission to report a written copy of the same to said Board within ten days after any birth or marriage provided to be registered, any person guilty of such omission shall be liable to pay a fine of ten dollars, which may be sued for and recovered in the name of said Board."

CERTIFICATE OF MARRIAGE.

STATE OF NEW YORK.

I hereby certify, that and

..... were joined in marriage by

me, in accordance with the Laws of the State of New York, in the

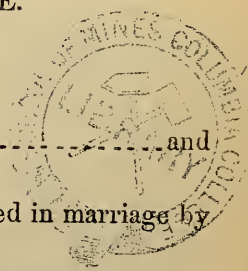
city of this day of

186 .

Witnesses to the marriage : (Attest,)

(Official Station)

Residence



Within TEN DAYS from the hour of a BIRTH this form of report must be filled out and returned to the Bureau of Vital Statistics of the Board of Health.

[Extract from Statutes.]

From § 13, Chap. 74, Session Laws, 1866.—"It shall be the duty of the parents of any child born in said district (and if there be no parent alive that has made such report, then of the next of kin of such child born), and of every person present at such birth, within five days after such birth or death, to report to said Board in writing, so far as known, the date, ward and street number of said birth, and for every omission to report a written copy of the same to said Board within ten days after any birth, any person guilty of such omission shall be liable to pay a *fine of ten dollars*, which may be sued for and recovered in the name of the Board.

N. B.—This law is designed to secure a faithful report of birth from the attending physician, or some one of the persons who were present at the birth. This law will be rigidly enforced, both as regards the medical attendant and the parents of the child.

Still-births are certified upon a form particularly designed to answer the double purpose of furnishing the evidence upon which permission for the burial of such infants is granted, and for giving the requisite facts for permanent registration of the birth.

RETURN OF A BIRTH.

*To the Bureau of Vital Statistics, Metropolitan Board of Health,
301 Mott street, New York :*

1. Full name of child (if any)
2. Sex
3. Race or color (if not of the white races)
4. Date
5. Place of birth
6. Full name of mother
- (Maiden name)
7. Mother's birth-place
8. Mother's residence
9. Full name of father
10. Father's occupation
11. Father's birth-place
- Name of medical attendant
- Name of person who makes this return
- Date of this return

Certificate of Causes of Death—Mortality Returns.—Records of death have hitherto been made in accordance with the names of causes which physicians and sextons have been pleased to give in their certificates, and as the apparent design of such certificates

has been to furnish a written warrant for obtaining permit to bury the deceased, there has been no studious regard for accuracy in stating the true causes of mortality. The claims of medical and sanitary science, the right of posterity to know the true causes that at any period have destroyed life, and especially the necessities of sanitary government in its attempt to deal with all the preventable causes of mortality, indicated to this Bureau the duty of adopting some practicable means for ascertaining the real and essential causes of death as understood by enlightened physicians. It is not enough that we are seriously informed by a coroner's or a physician's certificate that "bleeding," as 157 deaths were certified in the year 1865, or "asphyxia," as nearly 100 others were certified, or "debility," as nearly 1,000 other deaths were certified in that year, caused death.

To secure, as far as practicable, the needed precision and fullness in our daily returns and public registers of death, the subjoined form for the physician's certificate was adopted :

CERTIFICATE OF DEATH.

1. Name of the deceased (in full)
2. Age... ..years.....months.....days. Color
3. Single, (married), (widow), or (widower). (Cross out the words not required in this line)
4. Occupation
5. Birth-place..... (And how long in the United States, if of foreign birth,)
6. How long resident in this city.....
7. Father's birth-place. *(The State or Country.)*.....
8. Mother's birth-place. do do
9. PLACE OF DEATH, No.....Street.....Ward.....
10. I HEREBY CERTIFY, That I last saw h.....on the.....day of.....186 ; thatdied on the.....day of.....186 , and that the cause of h.....death was

Let these Returns be Specific.

[FIRST]

[SECOND, *(Remote or complicating,)*]

Place of burial

Time from attack till death.

(Date)

.....M. D.,
Medical Attendant.

(Undertaker)

(Place of business) (Address)

Physicians are required by the Board of Health to fill out this certificate accurately.
No Permit for Burial will be granted without a Certificate.

With the same objects in view, and to aid in attaining them and facilitating the bureau work and its statistical studies and correspondence, we adopted the nomenclature and classification for this branch of vital statistics that were prepared by Dr. Wm. Farr for the British Government, and have received the approval of the International Statistical Congress. The classification and nomenclature, together with suggestions and requests thereon to physicians, will be found in the appendix of this report. In this connection I must beg leave to bear testimony to the utility and convenience of the statistical nomenclature which this bureau has adopted, in common with the chief authorities in vital statistics of other nations. I would also acknowledge the courtesy and cooperation of the medical practitioners in New York and Brooklyn, in efforts to secure full and accurate certificates of death.

The sanitary code directs that all the permits received at the cemeteries shall be returned to the bureau every Monday. Ferry and bridge masters, expresses, railway and steamboat offices, when receiving a corpse for transportation beyond the limits of either city, retain the *coupon* of the burial permit and return it to the bureau.*

A corpse *in transit* through either city from places beyond the Metropolitan District is registered, and a *transit permit* is granted, which accompanies the remains. Thus the public record of the deceased and all movements of their remains is rendered complete, and is readily accessible for reference. This system can be equally complete throughout all the towns of the district whenever the counties of Kings, Westchester, Richmond, and Queens provide means for their local registration. The voice of the medical profession and of leading citizens in all these counties seems to be unanimous for the immediate adoption of the entire system of registration of marriages, births and deaths.

*Immediately upon taking possession of the public records, we issued instructions to all classes of persons who are concerned in the care, transportation, and burial of the dead. Every illicit, irregular, and unhealthful practice was, as far as practicable, brought under the surveillance and control of the Board of Health. Those instructions secured the prompt return of information and certificate of every death in the two cities, and a traceable record of the movement and destination of every corpse conveyed from or transported to or through either of the cities. In no other city in the world, did greater need of such systematic and rigid rules exist. I am happy to state that no opposition has been shown to this rigorous system, though until the Metropolitan Sanitary Board ordered it into operation, the city inspector's permits were to be had for the asking—ready signed and in quantity—at the shops of various undertakers and medicine venders in the different sections of New York city. Such a premium on the daily violations of the statute relating to interments and the sanctity of human remains was not to be tolerated; the Board of Health and its bureau of vital statistics could not allow that vicious system to continue for an hour. The Metropolitan Police quickly gathered up and brought to headquarters all those unguarded burial permits. There were other and very gross evils connected with the custody and registration of the dead, which were promptly corrected.

This Permit must, in all cases, accompany the body to its destination.

No.

METROPOLITAN BOARD OF HEALTH.

BUREAU OF VITAL STATISTICS, 301 MOTT STREET, NEW YORK.

New York, 1866.

Permission is hereby given to remove the remains of.

Age,;

Cause of Death,;

Place of Birth,;

Date of Death,;

Occupation,;

Residence,;

To for Interment.

..... Registrar.

Burial Permit No.

The Ferry or Bridge Master, or Transportation Agent, will please tear off and retain this Coupon of the Permit until called for officially.

THE FIRST USES OF DEATH RECORDS BY THE SANITARY GOVERNMENT.

There is a large class of the causes of death which so invariably depends upon local and immediately removable causes, that it becomes the duty of the Bureau of Vital Statistics instantly to inform the executive department of the Board of Health of the facts ascertained concerning every such death and its local cause. Cholera and typhus are types of this avoidable class of causes of death. Again, whenever or in whatever district there is a marked excess or increase in the rate of mortality from all causes, or, from any class of causes, or from a particular cause, the death record serves as a "barometer of health and disease," the index on the mortality scale is studiously watched, the storm is foreseen, and all hands summoned to arrest impending dangers.

To obtain accurate and prompt reports of death which would serve this purpose of quickly indicating the nature and true cause of deaths from day to day, and likewise to procure as complete a record as the permanent registration of death requires, the Board authorized the bureau to adopt such improvements in the certificates and returns as would best serve these objects.

The form for death returns as presented on page 169 has been adopted, and is now bringing in the desired elements of a record that at once aids the executive duties of sanitary government and insures the preservation of a permanent registry of facts that will hereafter serve important legal, social and hygienic purposes.

In order to procure the needed uniformity and definiteness in the designation of the causes of death, and likewise to bring our mortality reports into harmony with the chief Bureau of Vital Statistics in our own and other countries, it has been deemed expedient to adopt a classification and nomenclature that is most approved by medical men, and that will be in all respects in correspondence with the statistical nosology and plan of state registration of causes of death, prepared by Dr. Wm. Farr for the Registrar General's office of England, and, in 1855, recommended by the International Statistical Congress at Paris. A copy of this classification, &c., with various notes, will be found in the appendix of this report. A copy of this statistical nomenclature, with the names of the causes, in four languages, together with a circular of instructions to physicians, has been furnished to every medical practitioner in the two cities of the metropolitan district. Upon the basis of this classification we are now in

weekly correspondence with the chief centres of civic and national registration. But the most practical result of this effort at systematic grouping and uniform names of causes is exhibited in the daily and weekly study and mapping of the districts and wards of the city to show at a glance the locality and grouping of deaths from the zymotic and localized causes. The Board of Health and the sanitary superintendent, during the past months of peril, have thankfully borne witness to the utility of the system of registration and study of the causes of death adopted by the Bureau. In the words of Sir Sidney Herbert to Sir Alex'r Tulloch, upon the adoption of this improved system in the British army, I beg leave to say: "There is an advantage in having one standard classification; and the grouping of the zymotic diseases together seems to facilitate the application of the remedial or precautionary measures." *

The Daily Record of Zymotic Diseases.—As this is a group of preventable causes of death, and which in one way or another produces nearly half the mortality in our great cities, no delay was allowed in the adoption of plans for the record and analysis of the facts obtained day by day, concerning the *local circumstances* of every death from these foul-air infections. Born of sanitary neglect, and nurtured by filth and putrid fermentations, these maladies so point out the localizing conditions of epidemics and ill health that the daily study of them is regarded as one of the first duties in the bureau of vital statistics. This remark explains the prominence given by us to this class of diseases.

In the practical study and management of these infections and filth poisons, the medical topography of the entire Metropolitan District and the hygienic condition of particular populations, wards, streets, and blocks, have been kept constantly in view. The usefulness of district and street maps in defining the chief localities of preventable disease and danger has been daily illustrated. By this, as a collateral aid to the sanitary superintendent and the sanitary engineer the fatal operations of cholera and all diarrhœal diseases have been constantly watched and averted.

Small-pox, scarlatina, typhus, and typhoid fever, are also subjected to this system of surveillance and topographical registration.

These are some of the daily uses of vital statistics.

Meteorological Records.—A statement of the purposes and our

* Letter of R't Hon. Sir Sidney Herbert, M. P., to Sir Alex. Tulloch, in report of committee on army medical statistics, &c. London, 1861.

means of daily observations of the temperature, moisture, pressure, and general condition of the atmosphere, will be found in the appendix. The station for these observations was selected at the junction of Grand and Essex streets, as a point where it is practicable to obtain as fair an average temperature, humidity, and the winds, as it is possible in the built-up districts of the city. It should here be remarked that at our station of observations the mean temperature is usually a little higher, and the sensible humidity is frequently less, than in Brooklyn and the rest of the Metropolitan District. It was the duty of the central bureau to provide for these observations in the midst of the metropolis. And henceforth we hope to obtain weekly returns from several rural stations in the five counties of the district, as well as from Brooklyn. We seek such records as aids in the study of collateral conditions of health and disease. We study causes of sickness and death for the purpose of sanitary protection. Fallacies must be dissipated, and certainties increased.

These statements are preliminary to the consecutive presentation of the current summaries of results and observations in the bureau, by months and quarters of the year. It was manifestly necessary at the outset to adopt a system that should make the bureau accurate and complete in all the records pertaining to it; that should procure and analyze the circumstantial and local history of preventable causes of death; and that should, in every practicable way, help the Board of Health to work out its practical purposes, in saving life and protecting the public health. And I would here acknowledge the generous and intelligent recognition which the plans and results of the bureau have received by the Board of Health. My thanks are also due to the Board for the encouragement given to the labors of the bureau, and in allowing a small clerical staff to be trained in habits of methodizing and accuracy under the chief clerk, John Bowne, Esq., whose faithfulness and success in these duties, and in his recent labors as superintendent of the sanitary commission's hospital directory, during the war, have won the grateful regard of all who were responsible for results.

SUMMARY OF STATISTICS AND OBSERVATIONS DURING THE FIRST QUARTER OF THE YEAR.

The preparation of new forms, and the organization of new methods, for the conduct of bureau duties, having occupied the month of March, the entire body of records for the first three months

of the year is presented at one view, and without comment, except to mention that not a name or a fact has been placed on public record in the bureau under the city inspector during January and February. Certificates, to the number enumerated in the above table, had accumulated. There were also found five thousand one hundred and thirty-three birth returns (in loose slips) for the year 1865, all unrecorded.

The following tables give a condensed summary of registrations for the months of January, February and March :

	Marriages.	Births.	Deaths.
January	256	367	2,041
February	228	472	1,773
March	229	545	1,970
Total	713	1,384	5,784

The winter was severely cold, but the city and its vicinity were free from epidemics. Universal healthfulness had characterized the last months of the previous autumn in this district of the State, excepting only an unusual prevalence of malarial fevers in certain marshy localities near the water-sides. The mean temperature in January was 26° F., in February 32° F., and in March 35½° F. The mean temperature of "the cold week," ending January 13, was 13° F., or steadily 19° below freezing point.

Returns of deaths for the three months ending March 31, 1866.

MONTHS.	Males.	Females	Total.	United States.	Foreign.	Not stated.	Total.
January	1,084	957	2,041	1,346	686	9	2,041
February	958	815	1,773	1,104	654	15	1,773
March	1,044	926	1,970	1,263	686	21	1,970
Total	3,086	2,698	5,784	3,713	2,026	45	5,784

Returns of deaths—Continued

MONTHS.	Under 1 year of age.		1-2.		2-3.		3-4.		4-5.		5-10.	
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
January.....	281	202	142	139	63	61	37	23	22	18	21	31
February.....	261	180	101	75	45	53	24	27	16	13	38	42
March.....	238	274	99	90	44	44	32	20	14	16	43	36
Total.....	830	656	342	304	152	158	93	70	52	47	102	109
	*25.69		11.17		5.36		2.82		1.71		3.65	

Returns of deaths—Continued.

MONTHS.	10-15.		15-20.		20-25.		25-30.		30-35.		35-40.		40-45.	
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
January.....	12	9	24	36	51	39	64	57	36	63	51	48	52	30
February.....	24	17	18	24	43	39	54	53	50	39	48	42	46	37
March.....	16	18	17	27	47	40	58	48	50	63	42	38	42	27
Total.....	52	44	59	87	141	118	176	158	136	165	141	128	140	94
	*1.66		2.52		4.48		5.78		5.20		4.65		4.05	

Returns of deaths—Continued.

MONTHS.	45-50.		50-55.		55-60.		60-65.		65-70.		70-75.		75-80.	
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
January.....	42	28	36	28	31	25	34	15	27	34	20	12	7	16
February.....	39	23	36	28	26	26	19	17	25	18	13	21	9	15
March.....	59	22	40	25	40	23	28	28	24	22	22	19	10	18
Total.....	140	73	112	81	97	74	81	60	76	74	55	52	26	49
	*3.68		3.34		2.95		2.43		2.59		1.85		1.29	

* Percentage of deaths in each period of life on the total mortality of the quarter.

Returns of deaths—Continued.

MONTHS.	80-85.		85-90.		90-95.		95-100.		100-110.		Not stated.		Total.
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	
January	8	19	3	3	....	1	....	1	10	8	10	11	2,041
February	4	5	3	4	1	4	2	1	....	....	13	12	1,773
March	11	10	4	4	3	2	....	....	....	....	11	12	1,970
Total	23	34	10	11	4	7	2	2	10	8	34	35	5,784
	*.98		.36		.19		.07		.31		1.19		

There were five hundred and twenty-nine deaths from consumption, and three hundred and forty from inflammation and congestion of the lungs, during the quarter.

Scarlatina, which had caused five hundred and seventy-one deaths in the year 1865, steadily increased during the winter, causing two hundred and twenty-two deaths in these three months. Typhoid fever gave one hundred and ten deaths, and typhus gave one hundred and twenty-two. These diseases were increasingly prevalent when the Board of Health began its duties. The vital importance of hunting out every locality in which these infectious fevers existed, not only to aid in controlling their prevalence, but to indicate beforehand the fields which Asiatic cholera would elect if it visited us, led to the immediate adoption of a plan for the tabulation and study of the zymotic class of diseases. The plan went into operation at the beginning of April.

Diarrhœal diseases were less prevalent than usual, only ninety-seven fatal cases of both diarrhœa and dysentery having occurred in these first three months of the year.

Food supplies were abundant, and even the usual pressure of penury in the poorer classes was felt less than the want of comfortable and uncrowded tenements. The increasing prevalence of the infectious fevers before mentioned seems to have been mainly owing to the local sanitary condition of the poor, and the inattention to the local purification and disinfection. Cholera, in the preceding December, had suddenly swept off twenty-seven victims in one of the island institutions with its exotic infection. The mortality in children under five years old was, during the quarter,

* Percentage of deaths in each period of life on the total mortality of the quarter.

equal to fifty-three and one-fifth per cent. of all the deaths. Infants under one year of age gave twenty-five and two-thirds per cent. of the total mortality.

SECOND QUARTER OF THE YEAR.

The vital statistics of the three months ending June 30th present certain changes from the winter records. In April and May the rate of mortality steadily decreased. In the subjoined summaries of the death statistics of the quarter, the fact appears that there was no increase in the quantity of fatal zymotic disease until the second week in June, when there was an increase of twenty-three deaths in this class, and when there were six fatal cases of cholera and thirty of other diarrhœal maladies, against two of cholera and sixteen of other diarrhœal affections the previous week. But that was the week of the least mortality that has occurred in New York this year, less also than in any week for several years. Yet, during that week, ending June 16th, a week memorable for health, for the lowest fatality of disease, and for delightful weather, cholera made such sudden and threatening outbreaks in the Fourth, Sixth, Ninth and Thirteenth wards, as removed all doubts of the existence of that pestilence at several points in the city. The mean temperature of that week was $69\frac{2}{7}^{\circ}$ F., and the average humidity was 57, complete saturation of the air being regarded as 100.

In the last two weeks of June there was a rapid increase in mortality, zymotic causes giving 120 and 166 deaths successively, and the total mortality of the city being 434 and 533 in the successive weeks. Cholera was certified in but 5 of the deaths; in but 8 of the 967 deaths in the two weeks, "cholera morbus," or common "summer cholera," was certified as the fatal cause. And in those two weeks cholera infantum killed 32 children, and other diarrhœal maladies killed 58 other persons, old and young.

The circumstantial history of the twelve cases (eight fatal) of cholera, and all the deaths from diarrhœal diseases, from April to the 15th of June, failed to reveal any tendency to a choleraic epidemic, except at one point in Broome street, and one in the Fourth ward, in three foul blocks in Cherry and Oak streets, during the first and second weeks of the latter month. From the beginning of April until the time now mentioned, constant vigilance had been exercised in regard to the medical and local history in every death that could be suspected of a dependence upon the exotic cholera

infection, the presence of which in the city was justly feared, but, until May 1st, was yet undiscovered.

The twelve cases of well-marked Asiatic cholera that appeared during the first fifteen days of June were, with but the exception of the two groups just mentioned, distinct from each other, and were found in eight widely separated localities. All the circumstances of these cases tended to confirm our fears that this exotic pestilence was invading the city. The complete record of cholera as it prevailed in the Metropolitan District, and a sketch of its progress on this continent, will be found in the appendix of this report. But the fact should here be mentioned that early in June the medical dispensaries of New York began to make daily returns, in accordance with forms furnished by the bureau, of patients and places afflicted with diarrhœal sickness. Hospital officers and private practitioners at the same period began to make reports of this class of patients.

The increase in mortality during the last two weeks in June was mainly in the first five years of childhood. In the preceding two weeks there were but 756 deaths at all ages in the city; 195 of these were in the first year of infancy, and 344 were under five years old. But in the next two weeks there were 288 under one year, and 483 under five years of age in a total mortality of 957. The precise localities in which occurred this increase in the zymotic cause of death were, day by day, ascertained and brought to the notice of the sanitary superintendent and the Board. The full powers of the Board having been directed to the control and examination of cholera in its lurking places, the bureau of vital statistics became a very essential auxiliary in that work. At this period it was deemed expedient daily to designate by symbols on large street maps and accompanying lists: (*a*) the street, number, and location in the blocks in which deaths occurred from diarrhœal causes; (*b*) the sex and age of deceased, and the period of illness of the deceased persons.

Throughout these three months, the fact becoming more and more apparent that the want of definiteness in certificates of the cause of death might lead to serious consequences as regards outbreaks of choleraic diarrhœa, every effort was made to obtain accurate returns as to "time from attack till death," and as to the nature of the diarrhœa. During the month of April two deaths were reported as from cholera, but by an official investigation it was ascertained that one was from purpura hæmorrhagica and the

other from scarlatina. They were sudden deaths in persons acutely ill for one day.

Death by any of the diarrhœal diseases was a subject of special inquiry, and in every instance of indefiniteness or doubt in that class of reports the history of the case was immediately investigated. "Cholera infantum," which had killed but nine children in the month of May, and all other diarrhœas—Asiatic cholera excepted—which had registered sixty-one deaths in that month, showed such an increase during the second week in June as to warrant our investigation of every case of these fatal maladies that was reported to the permit clerk for burial. In the last three weeks of that month "cholera infantum"—the undefined name that covers a great variety of acute disorders in nurslings—registered in the three successive weeks, six, thirteen, and forty deaths, and Asiatic cholera during the month gave thirteen deaths, while other diarrhœal maladies gave twenty-four, twenty-one and forty-five deaths; yet during the last five days of June there was a hopeful suspense in the manifestations of cholera, but an acute diarrhœa was prevalent in a few localities. Though seventy-one of the eighty-five diarrhœal deaths were in early childhood, they only sharpened anxiety and vigilance. Our chart of the streets and dwellings in which those eighty-five deaths from diarrhœa occurred that week was accompanied by the following remarks: "That there is some important connection between local sanitary conditions and these fatal diarrhœal deaths is apparent upon the chart showing the diarrhœal district." At the same date we had occasion to communicate to the Board of Health the fact that the records of the deputy registrar for Brooklyn, "show that like causes appear to be in operation in similar localities in that city."

As the epidemiology of this quarter is wholly included in the account of cholera, we need only remark here that the enticements of business and remunerative labor of all kinds had, since the close of the war, steadily augmented the non-householding population of New York and Brooklyn, until, at the beginning of summer, these cities seemed to have reached a perilous excess of overcrowding in all the tenant house sections. The rate of foreign immigration had been for months about one thousand a day; the densest and most insalubrious quarters of the city were thronged with these persons.

Food supplies were abundant, and common labor found fair demands. The season was comparatively cold and backward until

the second week in June, but in the last half of that month the weather was hot and sultry. The average temperature was 74° and 78° F. respectively in those weeks, and the average humidity was nearly sixty, complete saturation being regarded as one hundred. Nearly seven inches of rainfall had occurred during the last month of the quarter. Natural conditions favored the propagation of filth infections; yet, with the exception of the prevalence of acute diarrhœa in the districts above mentioned, New York and Brooklyn were enjoying unusual health at the close of this quarter of the year. Yet, on the last day of this quarter we deemed it a duty to inform the Board of Health that the eighty-six deaths which had occurred that week gave us anxiety, and that, upon tracing each case home, it seemed to be mainly dependent upon local causes and extreme heat. Excessive humidity was the characteristic of that closing week. The mean temperature was a little more than 75° F. and the average humidity was nearly seventy-three, complete saturation being regarded as one hundred. Careful inquiries into the history of each of the eighty-six deaths from diarrhœal disease revealed but a single case of malignant cholera. The subjoined table shows how these other deaths were distributed in the wards in the week ending June 30th:

NEW YORK.—DEATHS FROM ZYMOTIC DISEASES.
Registered during the five weeks, ending Saturday, June 30, 1866.

WARDS.	Small-pox.	Measles.	Scarlatina.	Diphtheria.	Croup.	Whooping-cough.	Typhus fever.	Typhoid fever.	Cholera.	Cholera infantum.	Diarrhoea, Dysentery and cholera morbus.	Other zymotic diseases.	Total deaths from zymotic diseases.	Deaths by accident or negligence.	Total deaths from all causes.	Total population (in wards), census of 1865.	Percentage of zymotic deaths on total mortality.
First.....			1		2			1		3	3	2	12	9	44	9,852	27.27
Second.....			1									1	2	1	9	1,194	22.22
Third.....														3	5	3,367	.....
Fourth.....				1			3	2	2	3	3	2	16	5	59	17,382	27.12
Fifth.....		1	5	1	1				1	1	2	1	13	10	59	18,205	22.03
Sixth.....			6			2	1		2	3	4	4	22	3	75	19,754	29.03
Seventh.....		2	3	4	3		2	1	1	5	3	6	30	8	101	36,962	29.70
Eighth.....			7	1			1			2			15	5	76	30,098	19.74
Ninth.....		1	4		1	1		1	1	1	2	2	16	3	77	38,504	20.78
Tenth.....		1	9	1	1		2		3	5	4	4	30	3	86	31,537	34.88
Eleventh.....			1	1			2	1		4	3	4	16	3	106	58,993	15.09
Twelfth.....		3	4	1	1		27	6		4	1	3	52	3	124	28,259	41.94
Thirteenth.....			2							2	2	1	7	1	65	26,388	10.77
Fourteenth.....		1	10	1	1	1	1			2	3	2	22	4	76	23,382	28.95
Fifteenth.....				1						1			3	1	30	25,572	10.00
Sixteenth.....			4	2			3	1	1	4	10		25	5	105	41,972	23.81
Seventeenth.....		2	6	4			1	2		5	7	7	34	2	161	79,563	21.12
Eighteenth.....			5		1	1			1	7	2	4	21	3	109	47,613	19.27
Nineteenth.....	5		7		2	1	19	4		4	52	33	128	17	332	39,945	38.55
Twentieth.....		1	6	4		1	1	3		5	2	5	28	2	121	61,884	23.14
Twenty-first.....			1		2	1		3	1	1	4	9	21	10	145	38,669	14.48
Twenty-second.....			8	3		1	1	1		1	8	3	26	2	108	47,361	24.07
Total deaths from these diseases in all the wards.....	5	13	90	26	15	7	64	28	13	60	117	101	539	103	2,073	726,386	26.00

NEW YORK.—DEATHS FROM ZYMOTIC DISEASES.

Registered during the month of April, 1866.

WARDS.	Deaths by accident or negligence.												Total deaths from all causes.	Total population (in wards), census of 1856.
	Small-pox.	Measles.	Scarlatina.	Diphtheria.	Croup.	Whooping-cough.	Typhus fever.	Typhoid fever.	Cholera.	Cholera infantum.	Other diarrheal diseases.	Other zymotic diseases.	Total deaths from zymotic diseases.	
First	1	3	3	2	1	.....	.....	3	.....	.....	2	1	13	9,852
Second	1	.....	1	.....	.....	.....	.....	.....	2	1,194
Third	1	.....	.....	.....	.....	.....	1	.....	2	3,367
Fourth	1	.....	.....	.....	1	1	17,352
Fifth	2	.....	.....	.....	.....	.....	.....	.....	5	18,203
Sixth	1	.....	1	.....	.....	.....	.....	5	11	19,754
Seventh	1	.....	3	.....	.....	.....	2	.....	9	36,962
Eighth	1	.....	1	.....	.....	.....	.....	.....	8	30,098
Ninth	1	.....	1	2	.....	1	5	2	18	79
Tenth	1	1	.....	1	1	1	10	87
Eleventh	3	3	.....	.....	.....	2	14	31,537
Twelfth	2	.....	2	4	.....	1	2	2	22	107
Thirteenth	1	.....	9	4	.....	.....	10	16	43	58,953
Fourteenth	4	28,259
Fifteenth	1	.....	.....	.....	.....	.....	1	1	7	115
Sixteenth	54
Seventeenth	6	26,388
Eighteenth	1	.....	.....	.....	.....	.....	5	23,382
Nineteenth	34
Twentieth	25,572
Twenty-first	41,972
Twenty-second	75
Total deaths from these diseases in all the wards	7	11	63	50	33	7	35	28	.....	7	71	74	386	1,787
Total deaths from all causes	7	11	63	50	33	7	35	28	.....	7	71	74	386	1,787

NEW YORK.—DEATHS FROM ZYMOTIC DISEASES.

Registered during the month of May, 1886.

WARDS.	Small-pox.	Measles.	Scarlatina.	Diphtheria.	Croup.	Whooping-cough.	Typhus fever.	Typhoid fever.	Cholera.	Cholera infantum.	Other diarrheal diseases.	Other zymotic diseases.	Deaths by accident or negligence.	Total deaths from all causes.	Total population (in wards), census of 1885.
First	3	.....	.....	1	.....	.....	1	4	9	39	9,852
Second	2	1,394
Third	1	1	.....	12	3,367
Fourth	1	.....	1	.....	.....	2	.....	.....	1	2	2	33	17,352
Fifth	3	.....	.....	.....	.....	.....	.....	1	2	7	36	18,205
Sixth	1	.....	.....	.....	.....	.....	2	.....	.....	1	2	6	9	62	19,754
Seventh	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	61	36,962
Eighth	1	2	1	3	.....	2	2	.....	.....	.....	1	7	70	30,098
Ninth	1	1	3	.....	.....	.....	.....	.....	.....	2	12	81	38,504
Tenth	4	1	1	.....	.....	1	.....	1	6	2	16	69	31,537
Eleventh	2	1	2	.....	2	1	.....	1	.....	4	17	99	58,953
Twelfth	1	1	2	3	4	.....	2	.....	.....	1	1	15	4	7	28,259
Thirteenth	2	.....	.....	.....	.....	3	9	1	1	2	6	27	89	26,383
Fourteenth	1	1	2	.....	.....	2	.....	.....	1	1	.....	8	60	23,382
Fifteenth	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	67	25,572
Sixteenth	3	2	1	.....	.....	2	.....	.....	.....	.....	4	38	41,972
Seventeenth	2	7	.....	5	1	1	2	.....	.....	2	2	17	81	79,563
Eighteenth	1	3	.....	2	1	2	.....	.....	.....	2	4	24	150	47,613
Nineteenth	7	5	2	2	1	1	.....	.....	1	.....	.....	13	74	39,945
Twentieth	3	.....	.....	.....	.....	.....	15	3	.....	1	39	8	83	265	61,884
Twenty-first	2	4	4	1	1	1	2	.....	1	1	1	16	108	38,669
Twenty-second	1	.....	1	.....	1	.....	1	.....	.....	2	7	11	126	47,361
Twenty-third	4	.....	5	.....	.....	3	.....	.....	.....	3	19	82	47,361
Total deaths from these diseases in all the wards	5	20	49	26	35	5	33	32	1	9	61	53	329	1,724	726,386

Deaths from zymotic diseases (by wards), in the city and county of New York for the quarter ending June 30th, 1866. Also corresponding columns showing population by wards. Total mortality in do. during the quarter. The deaths by accident and negligence in do. The percentage of zymotic deaths to the total mortality during the period.

WARDS.	DEATHS FROM ZYMOTIC DISEASES.													Deaths by accident or negligence.	Total deaths from all causes.	Total population (in wards) census of 1865.	Percentage of zymotic deaths on total mortality.	Death rate per 1,000 annually of the population from the zymotic causes.	Death rate per 1,000 annually from all causes.	
	Small-pox.	Measles.	Scarlatina.	Diphtheria.	Croup.	Whooping cough.	Typhus fever.	Typhoid fever.	Cholera.	Cholera infantum.	Chronic diarrhoea, Dysentery, and Cholera morbus.	Other zymotic diseases.	Total deaths from zymotic diseases.							
First	1	...	4	2	6	5	...	3	...	6	7	34	16	124	9,852	27.42	13.79	50.35
Second	1	...	1	1	4	4	20	1,194	20.	13.40	67.
Third	2	2	4	7	25	3,367	16.	4.75	29.70
Fourth	3	1	3	5	2	3	...	4	4	28	9	129	17,352	21.71	6.34	29.77
Fifth	1	9	4	2	1	1	3	8	30	30	20	160	18,205	18.75	6.59	35.15
Sixth	1	...	12	...	1	2	6	...	2	4	8	4	40	45	5	196	19,754	20.41	8.	39.69
Seventh	2	8	6	6	2	4	6	1	5	3	9	45	12	235	235	36,962	19.15	4.87	25.43
Eighth .....	...	1	10	6	4	...	...	...	...	3	5	6	45	13	225	30,098	20.	5.98	29.90
Ninth .....	...	1	11	3	2	1	1	3	1	3	9	7	42	4	245	38,504	17.14	4.38	25.45
Tenth .....	...	2	16	4	4	1	7	4	3	6	4	10	61	6	226	31,537	26.99	7.71	28.66
Eleventh	1	3	6	6	6	1	...	5	...	6	6	7	53	14	312	58,953	16.99	3.61	21.17	
Twelfth .....	...	5	7	5	1	...	39	19	1	2	15	28	122	11	328	28,259	37.19	17.28	46.43
Thirteenth .....	...	2	4	4	1	...	...	...	3	3	4	2	22	3	179	26,388	12.29	3.33	27.13
Fourteenth	1	2	13	6	1	1	1	1	...	2	3	4	35	5	191	23,382	18.31	5.99	32.67	
Fifteenth .....	...	...	1	2	1	...	...	2	...	1	...	4	12	4	102	25,572	11.76	1.87	15.59
Sixteenth .....	...	2	11	6	7	1	4	4	1	4	12	5	57	8	261	41,972	21.84	5.43	24.67
Seventeenth .....	...	6	17	11	9	2	5	8	...	6	8	13	85	8	460	79,563	18.46	4.28	23.13
Eighteenth	1	1	12	8	6	2	...	...	1	8	3	10	56	6	265	47,613	21.13	4.70	22.26
Nineteenth	12	12	19	6	7	1	38	9	...	6	131	57	298	28	871	39,945	34.21	2.98	87.22	
Twentieth .....	...	1	18	15	5	3	4	7	...	7	3	11	74	9	350	61,884	21.01	4.78	22.62
Twenty-first .....	...	2	4	2	3	...	...	5	1	2	7	20	46	30	395	38,669	11.65	4.76	40.86
Twenty-second .....	...	1	16	5	7	2	3	4	...	1	13	9	61	6	285	47,361	21.40	5.15	24.07
Total deaths from these diseases in all the wards.	17	44	202	102	83	19	132	88	14	76	249	228	1,254	240	5,584	726,386	22.46	6.91	30.75	

Meteorological observations for the months of April, May and June.

Weeks ending.		Pressure of the atmosphere— Barometer.				Temperature.			Average humidity of the air, represented by 100.	Total rain-fall.	Prevailing winds.
Month.	Day.	Mean during the week.	Highest degree.	Lowest degree.	Mean during the week.	Highest degree marked by self-registering thermometer.	Lowest degree marked by self-registering thermometer (at night).				
April	7th.....	30.05	30.10	29.90	52	60	32	64	1.00	N. E.	
April	14th.....	30.13	30.31	30.01	40	50	32	61	2.00	W.	
April	21st.....	30.14	30.37	29.81	50	60	41	69	1.14	S. W.	
April	28th.....	29.30	29.75	29.12	47	61	40	55	1.00	S. W.	
Average for the month		29.90	30.13	29.71	47	58	36	62	5.14		
May.....	5th.....	29.66	29.82	29.40	53	66	40	47	1.10	W.	
May.....	12th.....	29.90	30.10	29.70	64	76	50	51	1.14	W.	
May.....	19th.....	29.82	30.01	29.64	58	80	47	64	1.97	W.	
May.....	26th.....	29.79	30.03	29.60	60	74	50	47	.....	$\frac{1}{2}$ E. & $\frac{1}{2}$ W.
Average for the month		29.79	29.99	29.58	59	74	47	52	3.21		
June	2d.....	29.78	30.11	29.31	62	75	53	80	1.80	E.	
June	9th.....	29.88	30.10	29.70	68	80	60	74	1.60	E.	
June	16th.....	29.95	30.11	29.80	70	82	57	57	1.04	E. & E.	
June	23d.....	29.83	30.10	29.51	74	85	64	59	1.40	S. & E.	
June	30th.....	29.93	30.11	29.80	78	94	63	58	.80	S.	
Average for the month		29.88	30.11	29.62	70	83	59	65	6.64		

Returns of deaths for the three months ending June 30, 1866.

MONTHS.	Males.	Females	Total.	United States.	Foreign.	At sea.	Not stated.	Total.
April	1,086	845	1,931	1,213	706	1	11	1,931
May	997	841	1,838	1,075	736	2	25	1,838
June	1,007	859	1,866	1,157	684	1	24	1,866
Total	3,090	2,545	5,635	3,445	2,126	4	60	5,635

Returns of deaths—Continued

MONTHS.	Under 1 year of age.		1-2.		2-3.		3-4.		4-5.		5-10.	
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
April	292	187	93	66	37	49	32	24	23	17	45	38
May	232	182	65	67	46	30	26	17	16	23	46	34
June	296	240	100	100	30	38	26	20	20	16	31	35
Total	820	609	258	233	113	117	84	61	59	56	122	107
	*25.35		8.71		4.08		2.57		2.04		4.06	

Returns of deaths—Continued.

MONTHS.	10-15.		15-20.		20-25.		25-30.		30-35.		35-40.		40-45.	
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
April	9	11	29	27	39	52	43	56	53	51	66	34	57	25
May	14	16	22	30	59	58	71	43	60	60	52	60	62	31
June	19	9	27	25	55	40	63	51	46	44	48	40	43	29
Total	42	36	78	82	153	150	177	155	159	155	166	134	162	85
	*1.38		2.84		5.37		5.89		5.57		5.32		4.38	

* Percentage of deaths in each period of life on the total mortality of the quarter.

Returns of deaths—Continued.

MONTHS.	45-50.		50-55.		55-60.		60-65.		65-70.		70-75.		75-80.	
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
April.....	49	31	43	32	31	24	34	19	24	21	20	20	21	10
May.....	49	19	33	37	46	22	22	27	32	20	17	20	13	19
June.....	32	35	28	20	42	24	28	29	26	25	15	15	12	13
Total.....	130	85	104	89	119	70	87	65	82	66	52	55	46	42
	*3.81		3.42		3.35		2.69		2.62		1.83		1.56	

Returns of deaths—Continued.

MONTHS.	80-85.		85-90.		90-95.		95-100.		100-110.		110-120.		Not stated.		Total.
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	
April.....	10	16	5	7	1	1	7	7	....	....	....	....	20	20	1,931
May.....	6	12	5	4	1	2	1	2	1	....	....	1	....	....	1,838
June.....	6	9	2	5	1	1	....	1	....	....	....	....	10	6	1,866
Total.....	22	37	12	16	3	4	8	10	1	....	....	1	30	26	5,635
	1.05		.49		.12		.32		.02		.02		.99		

* Percentage of deaths in each period of life on the total mortality of the quarter.

Reports of marriages for the three months ending June 30, 1866.

MONTH.	TOTAL.	NATIVITY.				CONDITION.			
		Color.		Native.		Not stated.		Married.	
		Foreign.		Singlo.		Male.		Female.	
		White.	Black.	Male.	Female.	Male.	Female.	Male.	Female.
April	274	273	1	201	187	71	85	234	239
May	451	450	11	328	299	117	149	402	406
June	523	513	10	349	316	170	202	439	448
Total	1,258	1,236	22	878	802	358	436	1,075	1,093
						22	20	183	165

Ages of persons married.

MONTH.	Under 20.		20 to 25.		25 to 30.		30 to 35.		35 to 40.		40 to 45.		45 to 50.		50 to 55.		55 to 60.		60 to 65.		65 to 70.		Not stated.
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	
April	9	71	80	122	105	53	41	11	19	11	4	5	...	2	1	1	1	1
May	5	117	173	194	154	86	64	23	14	15	10	3	6	6	2	...	2	9	10
June	14	145	174	204	167	100	67	26	46	26	6	14	2	2	...	1	...	...	...	...	1	3
Total	28	333	427	520	426	239	172	75	88	51	61	20	29	5	10	1	4	...	1	...	1	14	

Report of births for the three months ending June 30, 1866.

MONTH.	TOTAL.	COLOR.			SEX.			NATIVITY OF PARENTS.				NAME OF CHILD GIVEN.	
		White.	Black.	Not stated.	Male.	Female.	Not stated.	Foreign.	Native.	Father foreign (only).	Mother foreign (only).	Name.	Not stated.
April.....	583	579	4	....	299	284	....	*	*	*	*	....	....
May	921	914	5	2	466	453	2	....	....	....	....	....	....
June	915	913	2	....	521	394	....	....	....	....	....	....	....
Total.....	2,419	2,406	11	2	1,286	1,131	2	....	....	....	....	....	....

THIRD QUARTER OF THE YEAR.

The public health in both cities felt the full force of the excessive temperature of the hottest July that has been experienced during the present generation. With an average of 82° F., and for sixteen nights in the three weeks, with the mercury never falling to 70° in the self registering thermometer, and in some days falling only to 86° at night, and with an intensity of solar radiation that never is experienced in the tropics, there ensued a great mortality from sunstroke and heat, and from convulsive affections. The following table presents a special record of these effects of heat in connection with other fatal disorders of the nervous system during the "the heated term,, of the summer :

* The new style of certificate not being in use until June, there was no record kept of the nativity of parents and name of child.

Deaths by sunstroke, "effects of heat," and congestion of the brain, in the city of New York, from June 21 to August 4, 1866.

WEEKS ENDING AND CAUSES OF DEATH	Total.	SEX.		UNDER 20 YEARS OF AGE.										AGES ABOVE 20 YEARS.												
				1 to 2.		2 to 3.		3 to 4.		4 to 5.		5 to 10.		10 to 15.		15 to 20.		20 to 40.		40 to 60.		60 to 80.		80 up.		
		Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.			
June 30:																										
Sunstroke	14	13	1																							
Effects of heat.....	1	1																								
Congestion of brain.....	17	7	10																							
July 7:																										
Sunstroke	20	16	4																							
Effects of heat.....	4	3	1																							
Congestion of brain.....	27	17	10																							
July 14:																										
Sunstroke	114	87	27																							
Effects of heat.....	32	21	11																							
Congestion of brain.....	27	15	12																							
July 21:																										
Sunstroke	84	64	20																							
Effects of heat.....	37	22	15																							
Congestion of brain	22	13	9																							
July 28:																										
Sunstroke	1		1																							
Effects of heat.....	4	2	2																							
Congestion of brain	11	7	4																							
August 4:																										
Sunstroke																										
Effects of heat.....	1	1																								
Congestion of brain.....	10	8	2																							
Total.....	426	297	129	20	15	5	7		1	2	1	1		4	3	1		2	7	166	63	75	16	21	15	1

The foregoing table shows that during the four weeks ending July 21st, 399 deaths occurred from cerebral congestions of some sort, and that after deducting all that were reported as ordinary congestion, viz., ninety-three cases, or more than twice the usual number of deaths from that cause, in four weeks, there are still 306 deaths duly accredited to insolation or sunstroke. By turning to the diagram representing the cause of epidemic cholera, the general mortality, and the mean temperature of the period, the fact will be perceived that the heated term in July was attended by a sudden and enormous rise in the total mortality, so that in the week ending July 21st there were 1,362 deaths from all causes. In the fifth preceding week there had been only 363 deaths; the fourth week previously, there was 434; the third, 523; the second, 493; and the week ending the 14th, next preceding that of greatest mortality, the total was 827.

In this lethal period, cholera gained headway in several places in the two cities and within the public institutions on Ward's, Blackwell's and Randall's islands. In the emigrant hospitals on the island first named, fifty-three fatal cases of the epidemic occurred during the last two weeks of July, and on Blackwell's island there were forty fatal cases in July, thirty-seven of them occurring in the last five days of July.

There were several small and well defined districts of both cities in which there was much fatal diarrhœa and cholera infantum during the heated term. Their increase is represented by the following record:

WEEKS ENDING—	Total deaths from all other diarrhical maladies, excepting cholera.		Total deaths from cholera.		Total of all diarrhical maladies, including cholera.	
	In New York.	In Brooklyn.	In New York.	In Brooklyn.	In New York.	In Brooklyn.
June 30.....	85	27	1	.....	88	27
July 7.....	110	50	5	.....	115	51
July 14.....	245	98	9	1	254	107
July 21.....	442	154	29	22	471	176
July 28.....	297	68	70	41	367	139
August 4.....	279	103	285	68	564	171
August 11.....	268	90	241	108	509	198
August 18.....	242	93	146	89	388	182
August 25.....	239	71	91	54	330	125
September 1.....	181	60	48	21	229	81
September 8.....	164	64	60	24	254	88
September 15.....	150	63	67	10	217	73
September 22.....	142	49	51	12	193	61
September 29.....	94	43	35	11	129	54
Totals.....	2,938	1,063	1,133	470	4,076	1,533

Meteorological observations for the months of July, August and September, 1866.

Weeks ending.		Pressure of the atmosphere— Barometer.			Temperature.			Average humidity of the air, complete saturation being represented by 100.	Total rain-fall, inches.	Prevailing winds.
Month.	Day.	Mean during the week.	Highest degree.	Lowest degree.	Mean during the week.	Highest degree marked by self-registering thermometer.	Lowest degree marked by self-registering thermometer (at night).			
July	7th.....	30.03	30.21	29.90	81	97	66	48	.10	S.
July	14th.....	30.04	30.17	29.90	82	100	66	42	.07	S.
July	21st.....	29.96	30.10	29.87	83	102	60	48	.80	S.
July	28th.....	29.90	30.00	29.67	76	86	64	55	1.40	W.
Average for the month		29.98	30.12	29.83	80	96	64	48	2.37	
August.....	4th.....	29.88	30.00	29.70	77	88	65	54	2.40	W.
August.....	11th.....	29.89	30.10	29.60	70	84	60	49	1.10	W.
August.....	18th.....	29.99	30.10	29.90	70	81	58	60	1.70	W.
August.....	25th.....	29.80	30.00	29.70	68	82	55	58	2.90	W.
Average for the month		29.89	30.05	29.72	71	84	59	55	8.10	
September	1st	29.06	30.00	29.90	73	83	58	54	.50	S. & W.
September	8th.....	29.95	30.01	29.81	77	86	66	63	.60	S. & E.
September	15th.....	29.98	30.18	29.70	69	82	50	51	.88	W.
September	22d.....	29.95	30.24	29.81	68	85	50	67	2.20	S. & E.
September	29th.....	30.09	30.21	29.77	63	80	48	62	1.60	S. & E.
Average for the month		29.99	30.13	29.80	70	83	54	59	5.78	

NEW YORK.—DEATHS FROM ZYMOTIC DISEASES.

Registered during the week ending Saturday, July 7, 1866.

WARDS.	Small-pox.	Measles.	Scarlatina.	Diphtheria.	Croup.	Whooping-cough.	Typhus fever.	Typhoid fever.	Cholera.	Cholera infantum.	Chronic diarrhoea, dysentery and cholera morbus.	Other zymotic diseases.	Total deaths from zymotic diseases.	Deaths by accident or negligence.	Total deaths from all causes.	Percentage of zymotic deaths on total mortality.
First.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	1	8	25.
Second.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	2	50.
Third.....	1	2	.....
Fourth.....	3	.....	.....	.....	.....	10	50.
Fifth.....	15	53.33
Sixth.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	15	46.66
Seventh.....	23	34.78
Eighth.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	22	18.18
Ninth.....	20	20.
Tenth.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	33.33
Eleventh.....	18	34.04
Twelfth.....	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	24	37.50
Thirteenth.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	18	38.88
Fourteenth.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	23	43.48
Fifteenth.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6	16.66
Sixteenth.....	23	39.13
Seventeenth.....	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	47	40.43
Eighteenth.....	28	32.14
Nineteenth.....	53	37.74
Twentieth.....	1	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	31	23.81
Twenty-first.....	20	20.
Twenty-second.....	2	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	23	42.86
Total deaths from these diseases in all the wards.....	6	18	4	3	2	4	3	3	61	49	18	171	17	493	34.69

NEW YORK.—DEATHS FROM ZYMOTIC DISEASES.

Registered during the week ending Saturday, July 14, 1896.

WARDS.	Small-pox.	Measles.	Scarlatina.	Diphtheria.	Croup.	Whooping-cough.	Typhus fever.	Typhoid fever.	Cholera.	Cholera infantum.	Chronic diarrhoea, dysentery and cholera morbus.	Other zymotic diseases.	Total deaths from zymotic diseases.	Deaths by accident or negligence.	Total deaths from all causes.	Percentage of zymotic deaths on total mortality.
First	1	1	1	1	1	1	1	1	1	3	3	1	8	2	17	47.06
Second	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	50.
Third	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25.
Fourth	1	1	1	1	1	1	1	1	1	3	1	1	5	1	20	37.04
Fifth	1	1	1	1	1	1	1	1	1	6	2	1	10	3	27	37.04
Sixth	1	1	1	1	1	1	1	1	1	7	5	1	17	28	28	60.71
Seventh	1	1	1	1	1	1	1	1	1	15	4	1	22	39	39	57.69
Eighth	1	1	1	1	1	1	1	1	1	5	1	2	11	2	29	37.93
Ninth	1	1	1	1	1	1	1	1	1	9	3	1	20	1	39	51.28
Tenth	1	1	1	1	1	1	1	1	1	6	1	1	9	1	35	25.71
Eleventh	1	1	1	1	1	1	1	1	1	17	5	1	27	68	39.71	39.71
Twelfth	1	1	1	1	1	1	1	1	1	4	2	1	12	1	32	37.50
Thirteenth	1	1	1	1	1	1	1	1	1	12	4	1	18	33	33	54.54
Fourteenth	1	1	1	1	1	1	1	1	1	4	5	1	10	23	23	43.48
Fifteenth	1	1	1	1	1	1	1	1	1	1	1	1	2	17	17	11.76
Sixteenth	1	1	1	1	1	1	1	1	1	8	3	1	13	40	40	32.50
Seventeenth	1	1	1	2	1	1	1	2	1	24	6	1	37	87	87	42.53
Eighteenth	1	1	1	1	1	1	1	1	1	7	2	1	13	39	39	33.33
Nineteenth	1	1	2	1	1	1	5	1	1	5	17	6	37	1	86	43.02
Twentieth	1	1	3	1	1	1	1	1	1	16	3	1	24	1	60	40.
Twenty-first	1	1	1	1	1	1	1	1	1	7	1	2	13	2	45	28.88
Twenty-second	1	1	3	1	1	1	1	1	1	13	3	1	20	4	60	33.33
Total deaths from these diseases in all the wards.....	1	4	21	5	3	3	13	6	11	172	73	17	329	21	827	39.90

NEW YORK.—DEATHS FROM ZYMOTIC DISEASES.

Registered during the week ending Saturday, July 28, 1866.

WARDS.	Small-pox.	Measles.	Scarlatina.	Diphtheria.	Croup.	Whooping-cough.	Typhus fever.	Typhoid fever.	Cholera.	Cholera infantum.	Chronic diarrhoea, dysentery and cholera morbus.	Other zymotic diseases.	Total deaths from zymotic diseases.	Deaths by accident or negligence.	Total deaths from all causes.	Percentage of zymotic deaths on total mortality.
First	1	3	4	6	1	3	6	4	48	176	121	29	402	25	771	52.19
Second	1	3	4	6	1	3	6	4	48	176	121	29	402	25	771	52.19
Third	1	3	4	6	1	3	6	4	48	176	121	29	402	25	771	52.19
Fourth	1	3	4	6	1	3	6	4	48	176	121	29	402	25	771	52.19
Fifth	1	3	4	6	1	3	6	4	48	176	121	29	402	25	771	52.19
Sixth	1	3	4	6	1	3	6	4	48	176	121	29	402	25	771	52.19
Seventh	1	3	4	6	1	3	6	4	48	176	121	29	402	25	771	52.19
Eighth	1	3	4	6	1	3	6	4	48	176	121	29	402	25	771	52.19
Ninth	1	3	4	6	1	3	6	4	48	176	121	29	402	25	771	52.19
Tenth	1	3	4	6	1	3	6	4	48	176	121	29	402	25	771	52.19
Eleventh	1	3	4	6	1	3	6	4	48	176	121	29	402	25	771	52.19
Twelfth	1	3	4	6	1	3	6	4	48	176	121	29	402	25	771	52.19
Thirteenth	1	3	4	6	1	3	6	4	48	176	121	29	402	25	771	52.19
Fourteenth	1	3	4	6	1	3	6	4	48	176	121	29	402	25	771	52.19
Fifteenth	1	3	4	6	1	3	6	4	48	176	121	29	402	25	771	52.19
Sixteenth	1	3	4	6	1	3	6	4	48	176	121	29	402	25	771	52.19
Seventeenth	1	3	4	6	1	3	6	4	48	176	121	29	402	25	771	52.19
Eighteenth	1	3	4	6	1	3	6	4	48	176	121	29	402	25	771	52.19
Nineteenth	1	3	4	6	1	3	6	4	48	176	121	29	402	25	771	52.19
Twentieth	1	3	4	6	1	3	6	4	48	176	121	29	402	25	771	52.19
Twenty-first	1	3	4	6	1	3	6	4	48	176	121	29	402	25	771	52.19
Twenty-second	1	3	4	6	1	3	6	4	48	176	121	29	402	25	771	52.19
Total deaths from these diseases in all the wards.....	1	3	4	6	1	3	6	4	48	176	121	29	402	25	771	52.19

Deaths from zymotic diseases (by wards), in the city and county of New York for the month of July, 1866. Also corresponding columns, showing population by wards. Total mortality in do. during the month. The deaths by accident or negligence in do. The percentage of zymotic deaths to the total mortality during the period.

WARDS.	Small-pox.	Measles.	Scarlatina.	Diphtheria.	Croup.	Whooping-cough.	Typhus fever.	Typhoid fever.	Cholera.	Cholera infantum.	Chronic diarrhoea, dysentery and cholera morbus.	Other zymotic diseases.	Total deaths from zymotic diseases.	Deaths by accident or negligence.	Total deaths from all causes.	Total population (in wards), census of 1865.	Per cent. of zymotic deaths on total mortality.
First.....	.....	3	1	.....	.....	.....	.....	.....	7	16	12	1	40	10	103	9,852	38.80
Second.....	.....	.....	2	.....	.....	.....	.....	.....	1	2	2	.....	7	4	14	1,194	50.
Third.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	3	10	3,367	10.
Fourth.....	.....	.....	.....	.....	.....	.....	1	1	3	16	8	1	30	6	106	17,352	28.30
Fifth.....	.....	.....	4	1	1	1	2	.....	.....	16	12	4	44	6	107	18,205	41.12
Sixth.....	.....	1	.....	.....	1	.....	5	.....	11	22	18	3	61	2	118	19,754	51.61
Seventh.....	.....	1	6	1	.....	.....	.....	.....	3	40	15	2	68	2	143	36,962	47.55
Eighth.....	1	1	.....	1	1	.....	.....	.....	1	23	11	6	44	6	137	30,098	32.12
Ninth.....	.....	1	1	2	1	3	1	1	3	22	26	1	62	5	149	38,504	41.61
Tenth.....	.....	2	4	.....	.....	2	.....	2	2	29	14	4	57	3	145	31,537	39.31
Eleventh.....	2	2	2	2	.....	2	.....	2	2	71	25	6	114	5	268	58,953	42.31
Twelfth.....	1	3	3	2	.....	1	5	8	10	25	17	16	83	5	151	23,259	51.97
Thirteenth.....	.....	.....	2	1	.....	.....	.....	1	3	32	17	.....	56	1	112	26,388	50.
Fourteenth.....	1	1	3	1	.....	.....	1	.....	12	24	18	1	61	1	122	23,382	50.
Fifteenth.....	1	1	1	1	.....	.....	.....	.....	.....	7	5	2	17	2	58	25,572	29.31
Sixteenth.....	.....	.....	5	.....	.....	.....	.....	2	.....	29	19	3	58	1	147	41,972	33.46
Seventeenth.....	1	1	5	3	1	.....	3	3	3	95	34	6	154	1	357	79,563	43.13
Eighteenth.....	.....	.....	4	.....	1	1	.....	.....	.....	47	13	3	69	1	172	47,613	40.11
Nineteenth.....	.....	1	4	.....	.....	1	8	2	4	41	86	29	176	3	359	39,945	46.24
Twentieth.....	2	2	4	.....	1	.....	1	.....	.....	55	16	6	84	5	246	61,884	34.14
Twenty-first.....	1	.....	1	4	1	.....	1	1	5	29	21	8	72	8	231	38,669	31.16
Twenty-second.....	.....	1	11	4	1	.....	.....	1	.....	46	21	4	89	6	198	47,361	45.
Total deaths from these diseases in all the wards.....	2	19	63	21	8	9	27	25	73	687	407	103	1,447	86	3,453	726,386	42.19

NEW YORK.—DEATHS FROM ZYMOTIC DISEASES.

Registered during the week ending Saturday, August 4, 1866.

WARDS.												Deaths by accident or negligence.	Total deaths from all causes.	Percentage of zymotic deaths on total mortality.
	Small-pox.	Measles.	Scarlatina.	Diphtheria.	Croup.	Whooping-cough.	Typhus fever.	Typhoid fever.	Cholera.	Cholera infantum.	Chronic diarrhoea, dysentery and cholera morbus.	Other zymotic diseases.	Total deaths from zymotic diseases.	
First	14	5	2	.....	21	70.
Second
Third	1	.....	4	.....	1	25.
Fourth	1	.....	2	6	4	.....	13	56.52
Fifth	2	5	2	.....	10	58.81
Sixth	1	1	2	.....	.....	2	9	4	4	1	17	62.96
Seventh	1	.....	1	7	4	.....	15	53.57
Eighth	2	.....	.....	.....	.....	4	6	9	1	23	65.71
Ninth	1	.....	.....	.....	.....	1	6	7	3	.....	18	54.54
Tenth	2	.....	.....	.....	.....	.....	1	7	1	.....	11	37.93
Eleventh	3	2	9	6	.....	21	41.19
Twelfth	1	.....	.....	2	.....	.....	2	2	86	9	10	8	118	89.39
Thirteenth	2	6	4	.....	12	66.66
Fourteenth	4	5	3	.....	13	50.
Fifteenth	1	4	3	3	.....	9	60.
Sixteenth	1	1	.....	1	.....	.....	4	6	4	2	20	64.52
Seventeenth	1	1	.....	.....	.....	1	.....	.....	22	7	3	35	45.45
Eighteenth	1	1	4	.....	7	24.14
Nineteenth	94	18	37	11	160	75.12
Twentieth	2	1	.....	.....	1	.....	3	8	7	1	24	54.54
Twenty-first	1	.....	.....	.....	.....	.....	.....	.....	4	5	9	2	21	35.26
Twenty-second	3	.....	.....	.....	.....	.....	.....	5	12	1	21	45.65
Total deaths from these diseases in all the wards,	5	12	7	2	1	5	9	239	144	135	31	590	16	77.73

NEW YORK.—DEATHS FROM ZYMOTIC DISEASES.

Registered during the week, ending Saturday, August 18, 1866.

WARDS.	Small-pox.	Measles.	Scarlatina.	Diphtheria.	Croup.	Whooping-cough.	Typhus fever.	Typhoid fever.	Cholera.	Cholera infantum.	Chronic Diarrhoea, Dysentery and cholera morbus.	Other zymotic dis- eases.	Total deaths from zymotic diseases.	Deaths by accident or negli- gence.	Total deaths from all causes.	Percentage of zymotic deaths on total mortality.
First.....	16	3	5	.....	24	2	33	72.72
Second.....	1	.....
Third.....	1	.....	4	7	4	1	1	1	2	50.
Fourth.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	17	2	29	58.62
Fifth.....	1	1	2	10	10.
Sixth.....	2	.....	.....	2	7	4	.....	15	.....	25	60.
Seventh.....	6	6	5	1	18	.....	36	50.
Eighth.....	1	.....	.....	.....	1	.....	2	1	4	.....	9	1	23	39.13
Ninth.....	1	.....	1	3	.....	3	2	1	11	2	26	42.31
Tenth.....	1	.....	.....	.....	6	1	18	33.33
Eleventh.....	26	.....	40	65.
Twelfth.....	1	1	1	1	34	9	10	1	59	.....	77	76.62
Thirteenth.....	1	.....	.....	.....	.....	.....	.....	3	4	.....	14	28.56
Fourteenth.....	1	.....	.....	2	2	2	.....	8	.....	17	47.06
Fifteenth.....	1	.....	8	37.50
Sixteenth.....	1	.....	.....	.....	.....	.....	2	.....	.....	1	.....	18	61.11
Seventeenth.....	1	1	1	1	.....	1	13	9	2	11	.....	47	57.45
Eighteenth.....	1	.....	.....	.....	.....	.....	1	.....	6	.....	27	2	27	51.85
Nineteenth.....	2	.....	61	15	41	6	14	.....	156	80.13
Twentieth.....	1	1	.....	1	1	.....	4	10	8	.....	26	2	51	51.96
Twenty-first.....	1	.....	.....	.....	4	6	6	4	21	3	44	47.73
Twenty-second.....	1	.....	.....	.....	.....	.....	5	4	9	.....	19	.....	46	41.30
Total deaths from these diseases in all the wards.....	4	4	5	6	5	10	145	108	134	24	445	18	748	59.49

NEW YORK.—DEATHS FROM ZYMOTIC DISEASES.

Registered during the week ending Saturday, August 25, 1866.

WARDS.

	Small-pox.	Measles.	Scarlatina.	Diphtheria.	Croup.	Whooping-cough.	Typhus fever.	Typhoid fever.	Cholera.	Cholera infantum.	Chronic diarrhoea, dysentery, and cholera morbus.	Other zymotic diseases.	Total deaths from zymotic diseases.	Deaths by accident or negligence.	Total deaths from all causes.	Percentage of zymotic deaths on total mortality.
First.....	1	.....	.....	.....	15	3	2	.....	21	2	32	65.63
Second.....
Third.....
Fourth.....	1	6	3	.....	10	.....	22	45.45
Fifth.....	2	1	4	1	8	1	17	47.06
Sixth.....	1	.....	.....	.....	.....	4	5	2	.....	12	.....	20	60.
Seventh.....	1	.....	.....	.....	.....	.....	.....	2	10	6	1	20	.....	34	58.82
Eighth.....	2	5	4	1	14	2	26	53.85
Ninth.....	4	7	6	.....	13	1	24	54.17
Tenth.....	1	.....	.....	.....	1	.....	.....	.....	.....	.....	10	.....	26	38.46
Eleventh.....	2	.....	.....	.....	.....	1	.....	6	10	6	1	26	.....	43	60.47
Twelfth.....	4	.....	15	5	16	4	48	.....	60	80.
Thirteenth.....	2	.....	1	.....	.....	.....	.....	1	6	1	.....	9	.....	18	50.
Fourteenth.....	2	3	2	.....	7	1	17	41.18
Fifteenth.....
Sixteenth.....	1	.....	.....	.....	.....	.....	2	.....	.....	.....	1	8	2	21	38.09
Seventeenth.....	1	15	2	2	21	1	51	41.17
Eighteenth.....	1	.....	1	7	5	1	15	.....	28	53.57
Nineteenth.....	1	.....	.....	.....	.....	.....	36	9	17	4	68	.....	106	64.15
Twentieth.....	1	.....	.....	.....	1	.....	5	10	7	.....	25	1	47	53.19
Twenty-first.....	9	6	8	.....	26	2	53	49.06
Twenty-second.....	1	2	.....	1	.....	.....	9	8	21	.....	42	.....	61	68.85
Total deaths from these diseases in all the wards.....	4	6	4	4	1	1	8	9	114	122	117	19	405	17	714	56.72

Deaths from zymotic diseases (by wards), in the city and county of New York, for the month of August, 1866. Also, corresponding columns, showing population by wards; total mortality in do. during the month; the deaths by accident or negligence in do.; the percentage of zymotic deaths to the total mortality during the period.

WARDS.	Total deaths from these diseases in all the wards.....															Percentage of zymotic deaths on total mortality.	
	Small-pox.	Measles.	Scarlatina.	Diphtheria.	Croup.	Whooping-cough.	Typhus fever.	Typhoid fever.	Cholera.	Cholera infantum.	Chronic diarrhoea, dysentery and cholera morbus.	Other zymotic diseases.	Total deaths from zymotic diseases.	Deaths by accident or negligence.	Total deaths from all causes.		
First.....	1	.....	.....	1	71	15	11	.....	99	5	134	73.88	
Second.....	1	.....	.....	.....	2	1	5	40.00	
Third.....	1	.....	1	.....	.....	.....	2	2	11	18.18	
Fourth.....	1	.....	.....	.....	1	.....	11	20	13	3	49	2	92	53.25	
Fifth.....	1	4	8	8	4	25	10	63	39.08	
Sixth.....	1	2	2	.....	2	.....	4	17	20	14	.....	62	.....	102	60.78	
Seventh.....	1	1	1	2	1	1	.....	10	33	19	2	71	3	130	54.61	
Eighth.....	1	.....	3	.....	.....	.....	.....	10	18	23	2	58	8	107	54.20	
Ninth.....	1	.....	1	1	1	6	6	22	20	2	60	4	117	51.28	
Tenth.....	4	1	1	.....	1	.....	3	19	11	2	41	1	101	40.59	
Eleventh.....	4	2	1	1	2	5	13	37	34	1	100	5	181	55.24	
Twelfth.....	4	1	1	1	.....	6	11	196	35	51	20	326	1	395	82.53	
Thirteenth.....	1	6	17	9	1	34	2	68	50.00	
Fourteenth.....	1	.....	1	9	12	10	2	35	1	78	44.87	
Fifteenth.....	1	.....	.....	1	3	6	4	2	17	.....	34	50.00	
Sixteenth.....	2	1	2	1	1	.....	4	4	15	13	5	48	3	93	51.61	
Seventeenth.....	2	3	2	1	1	2	1	3	68	22	9	114	5	238	52.10	
Eighteenth.....	1	2	.....	.....	1	1	.....	5	21	19	4	54	.....	114	47.37	
Nineteenth.....	1	1	.....	.....	3	.....	313	53	129	40	540	2	715	75.52	
Twentieth.....	2	5	2	.....	1	1	4	15	39	29	3	101	4	195	51.79	
Twenty-first.....	1	.....	2	1	.....	.....	1	26	23	31	11	94	9	192	48.91	
Twenty-second.....	5	2	.....	3	.....	.....	21	25	50	2	109	2	202	53.91	
Total deaths from these diseases in all the wards.....																	60.61

NEW YORK.—DEATHS FROM ZYMOTIC DISEASES. Registered during the week ending Saturday, September 31, 1866.														Deaths by accidents or negligence.	Total deaths from all causes.	Percentage of zymotic deaths to total mortality.
WARDS.	Small-pox.	Measles.	Scarlatina.	Diphtheria.	Croup.	Whooping-cough.	Typhus fever.	Typhoid fever.	Cholera.	Cholera infantum.	Chronic diarrhoea, dysentery and cholera morbus.	Other zymotic diseases.	Total deaths from zymotic diseases.			
First.....	1								9	4	1	1	16	2	22	72.73
Second.....															1	.....
Third.....															1	.....
Fourth.....								1	1	6	5		13	1	18	72.22
Fifth.....				1			1	1		1	3		7	2	20	35.
Sixth.....		1					2	2	2	3	1	1	10		21	47.62
Seventh.....					1	1				6	4	1	13		23	56.52
Eighth.....		2		1	1			1		4	5		14		26	53.84
Ninth.....								2		3	5		10		22	45.45
Tenth.....			1			1				2		1	5	1	20	25.
Eleventh.....		2			5		1	1	2	2		2	21	2	44	47.73
Twelfth.....				2			1	2	7	4	8	2	26	2	44	59.09
Thirteenth.....		1			1					4	2	1	9	1	20	45.
Fourteenth.....						1		1	1	3	1		7	1	20	35.
Fifteenth.....		1											1		8	12.50
Sixteenth.....									2	3	2	1	8	1	20	40.
Seventeenth.....		1		1			2	1	1	6	5	2	19	1	57	33.33
Eighteenth.....							1		1	3	5		10		24	41.67
Nineteenth.....					1				18	2	27	8	56		100	56.
Twentieth.....		1					1	1	1	8	7	3	21		48	43.75
Twenty-first.....			1	1	1					5	6	1	17		45	37.78
Twenty-second.....			1		1		1		5	7	9		24	2	43	55.81
Total deaths from these diseases in all the wards.....	1	11		6	11	3	7	13	50	79	102	24	307	17	647	47.45

NEW YORK.—DEATHS FROM ZYMOTIC DISEASES.
Registered during the week ending Saturday, September 8, 1866.

WARDS.	Small-pox.	Measles.	Scarlatina.	Diphtheria.	Croup.	Whooping-cough.	Typhus fever.	Typhoid fever.	Cholera.	Cholera infantum.	Chronic diarrhoea, dysentery and cholera morbus.	Other zymotic diseases.	Total deaths from zymotic diseases.	Deaths by accident or negligence.	Total deaths from all causes.	Percentage of zymotic deaths to total mortality.
First.....									4		3		7	.....	11	63.63
Second.....														.....	.....	.....
Third.....														.....	.....	.....
Fourth.....			1					1	2	4	3	1	11	1	26	42.31
Fifth.....				1				1	1	1	2	1	7	3	20	35.
Sixth.....			1		1			2	10	1	4	2	21	.....	37	56.75
Seventh.....				1				2	.....	3	3	1	10	.....	1	21
Eighth.....			1					3	2	2	3	.....	11	.....	21	47.62
Ninth.....				1				.....	.....	2	2	.....	11	3	24	45.83
Tenth.....				3			2	1	3	4	3	.....	6	.....	24	25.
Eleventh.....					1		2	.....	.....	.....	.....	.....	17	2	37	45.95
Twelfth.....		2	1	1		1	7	2	8	11	9	1	23	1	42	54.76
Thirteenth.....			1				.....	1	1	2	2	3	40	.....	62	64.52
Fourteenth.....			2				.....	.....	1	3	.....	.....	7	2	22	31.82
Fifteenth.....				1			.....	1	.....	.....	1	.....	9	2	1	45.
Sixteenth.....							.....	1	2	2	5	.....	10	1	7	28.56
Seventeenth.....					2		1	1	1	.....	.....	.....	12	.....	24	41.66
Eighteenth.....		1			1		1	1	1	2	5	.....	11	.....	35	34.29
Nineteenth.....							3	1	4	2	5	1.	11	.....	29	37.93
Twentieth.....							1	2	.....	6	13	6	34	1	80	42.50
Twenty-first.....			2				.....	.....	1	6	7	2	20	.....	40	50.
Twenty-second.....			2	2			.....	.....	7	7	5	1	15	12	46	32.61
.....							.....	.....	.....	.....	7	1	26	.....	49	53.06
Total deaths from these diseases in all the wards.....	3	11	10	5	1	14	20	50	69	95	21	299	656	45.58		

NEW YORK.—DEATHS FROM ZYMOTIC DISEASES.

Registered during the week ending Saturday, September 15, 1866.

WARDS.

	Small-pox.	Measles.	Scarlatina.	Diphtheria.	Croup.	Whooping-cough.	Typhus fever.	Typhoid fever.	Cholera.	Cholera infantum.	Chronic diarrhoea, dysentery, and cholera morbus.	Other zymotic diseases.	Total deaths from zymotic diseases.	Deaths by accident or negligence.	Total deaths from all causes.	Percentage of zymotic deaths on total mortality.
First.....	15	2	.....	2	19	.....	25	76
Second
Third
Fourth.....
Fifth.....
Sixth
Seventh
Eighth
Ninth.....
Tenth.....
Eleventh...
Twelfth
Thirteenth
Fourteenth
Fifteenth
Sixteenth
Seventeenth
Eighteenth
Nineteenth
Twentieth
Twenty-first.....
Twenty-second
Total deaths from these diseases in all the wards	9	5	3	5	7	14	67	51	99	32	292	18	624	46.79

NEW YORK.—DEATHS FROM ZYMOTIC DISEASES.
Registered during the week ending Saturday, September 22, 1866.

WARDS.	Small-pox.	Measles.	Scarlatina.	Diphtheria.	Croup.	Whooping-cough.	Typhus fever.	Typhoid fever.	Cholera.	Cholera infantum.	Chronic diarrhoea, and Dysentery, and cholera morbus.	Other zymotic dis- eases.	Total deaths from zymotic diseases.	Deaths by accident and negligence.	Total deaths from all causes.	Percentage of zymotic deaths on total mortality.
First.....	1	1	1	1	1	1	1	1	7	3	1	1	14	1	21	66.66
Second.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Third.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Fourth.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Fifth.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Sixth.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Seventh.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Eighth.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Ninth.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Tenth.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Eleventh.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Twelfth.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Thirteenth.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Fourteenth.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Fifteenth.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Sixteenth.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Seventeenth.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Eighteenth.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Nineteenth.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Twentieth.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Twenty-first.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Twenty-second.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Total deaths from these diseases in all the wards.....	1	4	6	2	4	7	15	54	55	87	25	260	20	560	46.43	

NEW YORK.—DEATHS FROM ZYMOTIC DISEASES.

Registered during the week ending Saturday, September 29, 1866.

WARDS.	Small-pox.	Measles.	Scarlatina.	Diphtheria.	Croup.	Whooping-cough.	Typhus fever.	Typhoid fever.	Cholera.	Cholera infantum.	Chronic diarrhœa, dysentery and cholera morbus.	Other zymotic diseases.	Total deaths from zymotic diseases.	Deaths by accident or negligence.	Total deaths from all causes.	Percentage of zymotic deaths on total mortality.
First.....	2	.....	.....	.....	8	.....	1	1	12	3	20	60.00
Second.....	2	5	.....
Third.....	1	.....
Fourth.....	1	.....	.....	.....	.....	.....	1	.....	3	1	1	7	.....	19	36.81
Fifth.....	1	.....	.....	1	.....	2	1	1	7	.....	11	63.63
Sixth.....	1	.....	.....	1	.....	.....	.....	9	2	3	1	17	1	34	50.
Seventh.....	2	1	1	4	1	13	30.76
Eighth.....	1	.....	.....	1	2	2	2	8	.....	22	36.36
Ninth.....	1	2	2	.....	.....	1	16	37.44
Tenth.....	1	1	.....	2	2	.....	7	1	20	35.
Eleventh.....	1	.....	1	.....	1	2	2	5	1	11	.....	28	29.28
Twelfth.....	2	.....	1	1	.....	1	4	.....	3	4	4	21	.....	34	61.76
Thirteenth.....	1	.....	.....	1	1	.....	3	1	.....	6	.....	15	40.
Fourteenth.....	1	.....	.....	.....	1	.....	.....	.....	2	.....	4	8	2	16	50.
Fifteenth.....	1	.....	.....	1	.....	2	.....	4	50.
Sixteenth.....	6	1	7	.....	19	36.81
Seventeenth.....	1	1	1	2	5	1	.....	11	5	37	29.72
Eighteenth.....	2	.....	.....	.....	1	.....	.....	1	2	.....	6	.....	18	33.33
Nineteenth.....	1	.....	.....	1	.....	.....	2	7	4	7	7	29	.....	55	57.72
Twentieth.....	7	1	3	.....	13	1	31	41.93
Twenty-first.....	1	.....	1	.....	1	.....	2	1	3	3	.....	12	4	39	30.76
Twenty-second.....	2	.....	.....	.....	.....	.....	.....	2	3	5	1	13	.....	30	43.33
Total deaths from these causes in all the wards.....	2	9	6	6	5	5	15	38	42	52	27	207	24	487	42.51

Deaths from zymotic diseases (by wards), in the city and county of New York, for the month of September, 1866. Also corresponding columns, showing population by wards; total mortality in do. during the month; the deaths by accident and negligence in do.; the percentage of zymotic deaths to the total mortality during the month.

WARDS.	Small-pox.	Measles.	Scarlatina.	Diphtheria.	Croup.	Whooping-cough.	Typhus fever.	Typhoid fever.	Cholera.	Cholera infantum.	Other diarrheal diseases.	Diarrhea, dysentery and cholera morbus.	Other zymotic diseases.	Total deaths from zymotic diseases.	Deaths by accident or negligence.	Total deaths from all causes.	Percentage of zymotic deaths on total mortality.
First	1	1	1	1	2	1	1	1	43	9	1	6	5	63	5	99	68.69
Second	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	7	00.
Third	1	1	1	1	1	1	1	1	7	18	1	19	3	53	4	106	50.00
Fourth	1	1	1	1	1	1	3	3	5	8	1	15	8	45	4	93	48.39
Fifth	1	1	1	3	3	1	2	5	30	15	1	13	6	83	3	160	51.88
Sixth	1	1	3	2	3	2	1	2	1	20	1	15	7	52	3	117	44.44
Seventh	1	1	2	2	2	1	1	4	4	11	1	16	3	46	5	108	42.60
Eighth	1	1	1	1	2	1	1	4	1	8	1	17	1	34	3	102	33.33
Ninth	1	1	1	1	1	1	4	2	3	12	8	8	2	39	3	121	32.23
Tenth	1	1	1	0	6	1	1	6	5	22	2	20	5	83	9	205	40.49
Eleventh	2	3	3	4	1	1	9	11	35	20	47	47	21	138	2	234	67.52
Twelfth	4	4	2	6	1	2	3	3	1	11	7	7	6	28	3	78	35.91
Thirteenth	1	1	2	1	1	3	7	3	4	13	7	7	4	41	5	89	46.06
Fourteenth	3	1	3	1	1	8	7	3	4	13	4	4	2	11	1	99	44.44
Fifteenth	1	1	1	1	1	1	1	3	5	11	19	19	2	40	1	30	36.66
Sixteenth	1	1	1	1	1	1	5	1	1	11	2	25	4	66	7	202	32.67
Seventeenth	1	1	3	2	2	2	5	3	5	15	15	29	4	66	7	202	32.67
Eighteenth	1	1	3	2	2	2	2	2	2	15	21	21	2	50	6	123	40.66
Nineteenth	2	2	2	1	2	1	4	7	52	17	76	76	40	201	6	389	51.67
Twentieth	2	2	2	1	2	1	4	6	13	24	25	25	7	82	3	201	40.79
Twenty-first	3	3	3	2	2	1	4	4	2	22	25	25	5	66	21	197	33.50
Twenty-second	9	2	2	2	1	2	4	4	35	22	40	40	3	119	3	208	57.21
Total deaths from these causes in all the wards	7	44	33	27	18	40	77	259	296	435	129	1,365	106	2,974	45.89		

Deaths from zymotic diseases (by wards), in the city and county of New York for the quarter ending September, 1866. Also corresponding returns showing population by wards. Total mortality in do. during the quarter. The deaths by accident and negligence in do. The percentage of zymotic deaths to the total mortality during the quarter.

WARDS.	DEATHS FROM ZYMOTIC DISEASES.												Deaths by accident or negligence.	Total deaths from all causes.	Total population (in wards) census of 1865.	Percentage of zymotic deaths on total mortality.	Death rate per 1,000 annually of the population from the zymotic causes.	Death rate per 1,000 annually of the population from all causes.
	Small-pox.	Measles.	Scarlatina.	Diphtheria.	Croup.	Whooping cough.	Typhus fever.	Typhoid fever.	Cholera.	Cholera infantum.	Chronic diarrhoea, dysentery, and cholera morbus.	Other zymotic diseases.	Total deaths from zymotic diseases.					
First.....	4	1	1	3	..	1	1	121	40	29	6	207	20	336	62.20	84.40	136.40
Second.....	2	.....	.....	.....	.....	.....	2	1	3	.....	9	7	26	34.62	30.00	87.20
Third.....	1	.....	21	54	40	7	132	9	27	11.11	3.60	4.00
Fourth.....	1	2	.....	1	.....	2	4	12	32	35	15	114	12	304	43.42	30.40	70.00
Fifth.....	4	.....	2	1	5	4	12	32	35	15	114	26	263	43.35	25.20	57.00
Sixth.....	3	5	2	4	2	7	9	64	57	45	8	206	5	380	51.21	41.60	76.80
Seventh.....	2	9	4	3	3	1	2	14	93	49	11	191	9	390	48.37	20.80	42.40
Eighth.....	1	2	3	5	2	2	2	4	15	52	50	11	148	19	352	42.04	18.40	40.80
Ninth.....	2	3	3	2	5	2	11	10	52	63	8	156	12	368	42.12	16.40	38.40
Tenth.....	2	9	7	.....	1	5	4	8	60	33	8	137	7	367	37.36	17.20	46.40
Eleventh.....	2	9	8	2	3	3	13	20	130	89	12	297	19	654	43.41	20.00	44.40
Twelfth.....	7	4	2	2	3	20	30	241	80	112	57	567	8	780	72.69	80.40	110.40
Thirteenth.....	4	2	1	.....	.....	5	10	60	33	3	118	6	258	45.74	18.00	39.20
Fourteenth.....	1	6	2	.....	4	1	5	25	49	33	9	137	7	289	47.40	23.60	49.60
Fifteenth.....	1	2	1	.....	.....	4	3	16	13	4	45	3	122	36.88	7.20	19.20
Sixteenth.....	2	7	2	1	2	.....	7	9	55	51	10	146	5	939	41.07	14.00	32.40
Seventeenth.....	3	11	7	4	3	10	7	11	178	81	19	334	13	797	43.91	16.80	40.00
Eighteenth.....	2	9	.....	3	2	3	2	7	83	53	9	173	8	409	42.30	14.40	34.40
Nineteenth.....	1	7	2	2	1	12	12	369	111	291	109	917	11	1,463	62.68	92.00	146.40
Twentieth.....	4	11	2	1	2	5	11	28	117	70	16	267	12	642	41.50	17.20	41.60
Twenty-first.....	1	1	4	6	4	1	1	0	33	74	77	24	252	38	620	37.42	24.00	64.00
Twenty-second.....	1	22	8	2	5	4	5	56	94	111	9	317	11	608	52.14	26.80	52.00
Total deaths from these causes in all the wards.....	2	41	138	73	45	40	85	146	1,080	1,490	1,363	350	4,853	262	9,794	49.55	26.80	54.00

Abstract of deaths registered in the city of New York, in the three months, ending September 30, 1866. Sex, nativity, age and percentage at each period.

MONTHS.	Males.	Females	Total.	United States.	Foreign.	At sea.	Not stated.
July	2,076	1,827	3,903	2,449	1,389	.....	65
August	1,776	1,729	3,505	1,984	1,383	.....	138
September.....	1,203	1,176	2,370	1,498	860	.....	21
Total	5,055	4,732	9,787	5,931	3,632	.....	224

Abstract of deaths—Continued.

MONTHS.	Under 1 year of life.		1-2.		2-3.		3-4.		4-5.		5-10.	
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
July	797	726	236	197	33	68	31	24	25	10	54	45
August.....	514	441	244	185	53	38	29	25	21	12	70	60
September	344	307	159	154	54	44	19	32	24	23	39	57
Total.....	1,655	1,474	639	518	140	150	79	81	70	45	163	162
*Per cent.	16.91	15.06	6.53	5.29	1.43	1.53	.81	.82	.71	.46	1.67	1.65
†Total	3,129		1,157		290		160		115		325	
‡Per cent.	31.97		11.82		2.96		1.63		1.17		3.32	

Abstract of deaths—Continued.

MONTHS.	10-15.		15-20.		20-25.		25-30.		30-35.		35-40.		40-45.	
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
July	16	16	46	36	98	79	104	81	107	105	100	101	94	54
August.....	39	26	40	56	85	121	90	129	72	107	74	91	84	79
September	24	22	34	38	51	69	62	58	54	64	77	64	58	48
Total	79	64	120	130	234	269	256	268	233	276	251	256	236	181
*Per cent.....	.81	.65	1.22	1.33	2.39	2.75	2.61	2.74	2.38	2.82	2.57	2.61	2.41	1.85
†Total.....	143		250		503		524		509		507		417	
‡Per cent.....	1.46		2.55		5.14		5.35		5.20		5.18		4.26	

* Percentage of deaths in each period of life on the total mortality of the quarter.

† Total of both sexes.

‡ Percentage of both sexes on total mortality of quarter.

Abstract of deaths—Continued.

MONTHS.	45-50.		50-55.		55-60.		60-65.		65-70.		70-75.		75-80.	
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
July	87	31	65	35	50	48	34	40	38	36	16	38	11	24
August	83	59	70	75	48	46	50	66	56	34	23	35	19	24
September	40	51	28	23	29	25	41	33	31	24	10	10	12	10
Total	210	141	163	132	127	119	125	133	125	94	49	83	42	58
*Per cent.....	2.15	1.44	1.67	1.34	1.30	1.21	1.28	1.36	1.28	.96	.50	.85	.43	.59
†Total	351		295		246		258		219		132		100	
‡Per cent.....	3.59		3.01		2.51		2.64		2.24		1.35		1.02	

Abstract of deaths—Continued.

MONTHS.	80-85.		85-90.		90-95.		95-100.		100-110.		Not stated.		Total.
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	
July	9	19	5	10	....	3	2	2	....	1	18	17	3,903
August	7	18	4	5	1	1	....	1	....	1	....	....	3,505
September	8	9	4	8	....	1	1	1	....	....	....	1	2,379
Total	24	46	13	23	1	5	3	4	....	2	18	18	9,787
*Per cent.....	.24	.47	.13	.24	.01	.05	.03	.04	....	.02	.19	.18	M. F. 51 65 48.36
†Total	70		36		6		7		2		36		
‡Per cent.....	.71		.37		.06		.07		.02		.37		

* Percentage of deaths in each period of life on the total mortality of the quarter.

† Total of both sexes.

‡ Percentage of both sexes on total mortality of the quarter.

Abstract of marriage returns for the three months ending September 30, 1866.

MONTH.	TOTAL.	COLOR.		NATIVITY.				CONDITION.			
				Foreign.		Native.		Not stated.		Single.	
		White.	Black.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
July	601	592	9	452	427	147	171	2	3	517	507
August	554	546	8	427	388	124	163	3	3	472	481
September	604	593	11	433	421	157	172	14	11	444	450
Total	1,759	1,731	28	1,312	1,236	428	506	19	17	1,433	1,438
								257	250	69	71

REMARKS.—During the summer months the returns became more and more complete, until, in September, there were scarcely any defects.

Ages of persons married.

MONTH.	Under 20.		20 to 25.		25 to 30.		30 to 35.		35 to 40.		40 to 45.		45 to 50.		50 to 55.		55 to 60.		60 to 70.		Not stated.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
July	4	104	174	255	206	140	99	45	62	29	25	10	19	9	4	1	4	3	....	1	4	4
August	7	103	191	231	183	120	72	54	45	22	24	8	19	6	7	3	4	2	....	....	4	4
September	9	103	165	242	197	145	124	52	41	23	24	12	14	7	10	2	2	....	....	4	1	17
Total	20	310	530	728	586	405	295	151	148	74	73	30	52	22	21	6	10	3	4	2	20	28

Report of births for the three months ending September 30, 1866.

MONTH.	TOTAL.	COLOR.			SEX.			NATIVITY OF PARENTS.					NAME OF CHILD.	
		White.	Black.	Not stated.	Male.	Female.	Not stated.	Foreign.	Native.	Father foreign (only).	Mother foreign (only).	Not stated.	Name.	Not stated.
July	945	931	9	5	509	431	5	621	167	62	73	22	591	354
August	1,236	1,212	11	13	617	606	13	756	192	103	89	66	700	536
September.	1,145	1,130	3	12	618	515	12	709	211	84	54	87	624	521
Total	3,326	3,273	23	30	1,744	1,552	30	2,116	570	249	216	175	1,915	1,411

DISEASES OF THE QUARTER.

The unusually high temperature, aided by local moisture and defective ventilation, stimulated the forces of "natural chemistry" to excessive activity in transforming local filth, however domestic or hidden, into putrid effluvia, and day by day the death records bore witness to the certainty with which local putrescence promotes fatal diarrhœas. And these records of mortality and medical observation, during the heated term, seem to testify that heat, in its direct effects upon the nervous system, and by its chemistry upon organic matter in decay, was doubly concerned in the destruction of life that ensued in July last.

Cholera threatened the entire city. Previous to the 15th of July it made fatal outbreaks in twenty distinct localities in New York. Brooklyn shared the same peril. But, without any acknowledged dependence upon the cholera infection, there were particular blocks and districts where ordinary diarrhœal maladies swept off vast numbers of infants and feeble persons—infants, almost exclusively, the first two weeks in July—but of the third week sweeping off thirty-eight adults by what was reported acute diarrhœa and dysentery, together with sixteen cases of common cholera morbus. Cholera infantum, which had killed sixty-one children in the first, and one hundred and seventy-two in the second, swept off two hundred and seventy-eight in the third week of July. In that memorable week the total mortality in New York was *one thousand three hundred and sixty-two*. Of this number there were three hundred and twenty-nine persons between the ages of *forty* and *sixty* years, and of infants less than twelve months old there were five hundred and thirteen. During the *lethial* week, cholera began its ravages in several of the penal and charitable institutions on the islands of the East river (included in the Twelfth and Nineteenth wards of New York), and in the Kings County penitentiary at Flatbush. Sometime during the first two weeks in July, that pestilence had obtained foothold in those places, and at the military rendezvous on Hart's Island and Governor's Island. It was on the 14th of July that a detachment of five hundred recruits left the latter island, per steamship San Salvador, for Savannah, and with three incipient cases of cholera, conveyed in that ship, and to the sands of Tybee Island, the infection, that quickly destroyed nearly one-fourth of these hardy soldiers. And the day in which that company was landed on Tybee the Board of health received information of the outbreak of cholera

at Hart's Island. A few days later a steamship transport conveyed infected soldiers from the New York rendezvous to the Gulf of Mexico, up to New Orleans, and thence, with a sickening detachment of the same company, around to Galveston. A few days later cholera made its appearance at Newport Barracks, Ky., among soldiers just arrived from our New York rendezvous. Two of those men died the last week in July.

This rapid glance at the connection and significance of the events which removed the veil of popular doubts as to cholera's presence and infectiousness, is given in this place for the purpose of unfolding the nature and fearful nearness of the peril to which the entire population of the Metropolitan district was exposed. This review of essential points in the threatening visit of the epidemic is also essential to a proper understanding of the responsibilities of the hour. The record of the three thousand nine hundred deaths, which occurred in the thirty-one days of July in New York, had other aspects than those of mere registration at that time. Then, every local and personal circumstance was subjected to rigid scrutiny, and the hiding places of cholera were searched for as for an enemy that plotted destruction. The excessive temperature of July and the last weeks of June awakened into activity the local causes of zymotic deaths to such an extent that all the cholera fields lay *mapped out*, as it were, by these records of death, from the great group of foul air causes.

Had Asiatic cholera been the sole cause of the one thousand four hundred and forty-seven zymotic deaths in July, or of the five hundred and thirty-nine deaths of that class in June, the epidemic would have been an uncontrollable pestilence, defying the vigilance of sanitary officers and escaping the limits of all processes of disinfection. Deferring further notice of cholera in this sketch of the quarterly records, we would invite attention to the preceding abstract from the records of the zymotic causes of death, as tabulated from day to day, for the practical purposes of the Board, in the third quarter of the year.

REGISTRATION OF MARRIAGES,

The fact that only 49,131 marriages (98,262 married persons) have been registered in the city of New York since the first statutory provision, in 1847, was made for such registration, affords ample evidence that the law upon this subject has been disregarded. And when we observe, that in the city of Brooklyn there

had been no registration until the present year, and that in the suburban towns the general statute of 1847 and 1853 relating to marriage registration has remained a dead letter, we need offer no further evidence to show that these state laws and their administration have been, from some cause, practically defective. Section 13 of the new Sanitary Code defines the duties of clergymen and magistrates who solemnize marriages, and, by section 15 of the Code, the county and town clerks in the suburban portions of the Metropolitan district are directed to make returns to the Board of Health of all marriage records that shall come into their hands under the general provisions of the statute of 1847. But the Bureau of Vital Statistics has not yet received the record of any marriage out of the limits of New York and Brooklyn.

The time has arrived when the law upon this subject should be implicitly obeyed, throughout the Metropolitan district and in every town and city in the State. Reasonable efforts have been made to procure faithful returns of marriages in the district, but there is believed to be need of essential modifications of the general law of the State concerning marriage registration, that shall provide the requisite incentives, methods and penalties, relating to marriage returns. The suggestion of needed improvement in this matter must be sought from the publicist and the moralist; for it is the duty of the registrar of vital statistics, to superintend the methods and records, and analyze results, rather than assume the functions of a legislative committee or a council of clergymen and sociologists. It must be manifest to every reflecting person, that if in the transfer of the most insignificant title to land or estate, the law needs require formal registration and writing out of descriptive records; and, if the legal rights of lineage and heirship are worth our regard, then much more, should there be such sanctions, formalities and records of marriages as will help maintain alike the claims, duties and honor of lineage, and at the same time furnish needed sources of information and self preservation to society. We submit the following remarks upon two or three points that should receive the immediate attention of the board and of the public.

First.—The most essential point in civil registration of marriages, is to secure completeness and exact truthfulness in the public records. And to provide for this there needs to be some specified formality and method in procuring from the betrothed persons such a return of the facts relating to themselves, as will make it

easy for the clergyman or magistrate to furnish the bureau of vital statistics a complete and faultless return of the marriage he solemnizes. The duty of procuring the required personal records relating to the persons intending marriage, plainly enough belongs to the bridegroom, and to the bride and her relatives; but their obligation in this matter by no means diminishes the *official* obligation of the person who solemnizes the marriage. This statistical registration is a duty which the citizen owes as truly to the State as to himself and to his prospective offspring; while, for the protection of children and heirs-at-law, and for other good reasons connected with the welfare of society, the State owes it to the people of the future as well as of the present generation to insist upon and secure a faithful compliance with its law of marriage registry.

The methods and the penalties relating to marriage returns must apply to those persons who are primarily responsible, viz., to the persons married, no less than to the person who solemnizes the marriage; and experience in several states has proved, that the system of registration is most perfect, which previous to the marriage, secures a special registration of the intention to marry, and which either preserves or indorses the personal returns upon which the officiating clergyman or magistrate finds his warrant for the solemnization of the bans. I mention these points solely with regard to the design and success of the laws relating to marriage registration. There are other aspects of these questions that may well concern parents and philanthropists. But whatever else of good such requirements of law may secure, they will induce needful and proper deliberation, and promote security and good faith in proposals and acts of matrimony. We can illustrate in a most practical manner some of the social and legal considerations that attach to marriage registration, and show what evils, what sorrows, and what injustice may result from neglect or imperfection of registration, particularly among the poor, and in the families of husbands who have died possessed of unsettled titles to money or estate, as in the case of deceased soldiers or persons having marriage or birthrights in other states, by briefly referring to our book of daily occurrences in this bureau the past ten months. The chief clerk, Mr. Bowne, has prepared the following brief abstract of a few memoranda from the daily notes of these cases among the applicants for *searches* and *transcripts*. The tears and words of abject wretchedness, which that faithful officer has become familiar

with in his dealings with this class of applicants, are not needed to convince the reflecting mind, that these are subjects of vital interest to society :

"Mrs. — called to ascertain if a return of a marriage between — and —, had been made to the bureau of vital statistics. She has ascertained that the groom has a lawful wife residing in Washington, D. C., and also has promised to become the husband of two other women residing in this city. No record is found of the second marriage, and upon inquiry of the clergyman by whom the ceremony is believed to have been solemnized, for a certificate of it, an answer is received that if the parties were married by him, fictitious names had been given.

"The widow of a deceased soldier applied for a transcript of the record of her marriage in 1855. She produced ample evidence that she was married in an episcopal chapel, by a clergyman who is found to have carried away with him, to parts unknown, all the records of that chapel. He had never made returns of his records of marriage for public registration while residing in the city.

"Mrs. — calls to find if her husband has been married again, as she has been informed is the case, and that the return of the bigamist's marriage has been made to the bureau. She has been rightly informed, and leaves the room crushed and hopeless, for her own marriage to him occurred previously to the commencement of registration in 1853, and the clergyman who married them has gone with his records to parts unknown.

"A similar inquiry in behalf of a lady residing in Pennsylvania is received, and the same answer must be given. The husband and his second wife are in the city.

"Such inquiries as these are being received with a frequency that is appalling to the thoughtful mind.

"Fathers, with anxious countenances, are often here to learn the fate of their inexperienced sons and daughters, and father and wife utter imprecations upon the 'easy process' of the present marriage law."

The importance and necessity for trust worthy records of marriages and births, the following statement of a few cases taken from a large number, furnished by the Protective War Claim Association of this city, will make apparent. These instances not only serve to illustrate the delay, suffering and expense consequent upon the absence of public record, but they also appeal to the patriotic pride of the State when it is considered that the

wives and mothers and children of our brave soldiers are the victims of this want of watchful care :

“ Mr. — and Miss — were married in this city in 1850. The husband enlisted in the Union army and died in the service. Without proof of marriage, application for a pension by the widow of a deceased soldier is not allowed. No record of marriage—civil or ecclesiastical—was found by this poor woman. .

“ In 1853, Mr. — and Miss — were married by the Rev. —, in charge of the baptist church, on — street, of this city. No record is to be found of the marriage, private or public, and the claim for pension is pending the evidence of some witness to the marriage.

“ Many of the churches seem to keep no official register of marriages, the minister preserving only a private memorandum, which being considered as his property is carried from point to point, wherever he migrates.

“ In 1847, a marriage ceremony was performed in this city by a methodist clergyman. The same absence of all record of the marriage is discovered, and as this soldier's widow failed to find any witnesses of the ceremony now living, the clergyman was sought out, and, upon *recollection* merely, was appealed to for an affidavit to establish the widow's claim against the government.”

In the orphans' claims for pension, bounty, and arrears of pay, much trouble is also occasioned from the non-record of births. Very frequently children have been adopted by persons who have but little, if any, knowledge of their parents or of their families. And, instead of one common fountain of public records, from which to draw the evidence necessary to establish rightful heirship and social status, the evidence must be gathered from the chance records of the baptismal ordinance, performed in unknown churches.

It would be but a tiresome repetition to show further the serious and embarrassing consequences to soldiers' widows and children, arising from the neglect in reporting the marriages and the births by those who are in professional attendance.

These examples of daily experience show how sadly the wife, the widow, and the orphan suffer the consequences of past neglects in the registration of marriages and births. The evils resulting from such failure in a duty of the government, though traceable to the individual delinquencies of clergymen, magistrates and

physicians, should no longer be tolerated. Absolute obedience to the statute of vital registration is entirely practicable.

An inspection of the subjoined table will convey a correct idea of the steady increase of the rate of marriage registration, and of this bureau's duties connected therewith, during the current year.

Number of Persons Married in the City of New York during the Ten Months ending November 1st, 1866, with Monthly Increase from the Average (455) Monthly Returns of Marriages in New York City in the year 1865.

Months.	Total.	Increase.
January	512	57
February	456	1
March	458	3
April	548	93
May	922	467
June	1,046	591
July	1,202	747
August	1,108	653
September	1,208	753
October	1,506	1,051

Marriage-rate.—The ratio of marriages to total population may vary considerably year by year; but scarcely more than the variations in death-rates and birth-rates. General prosperity in business, abundant and cheap markets, as well as a healthful moral tone in the community, are in all countries the noticeable concomitants of increase in the rate of marriages upon population. The registrar-general of England mentions the increase in the English marriage-rate in the year 1863, as follows: "The cloud passing over the cotton manufacturing districts, in 1861 and 1862, was reflected at once in the marriage registers, and the rate, which in 1860 was as high as one thousand seven hundred and ten persons married in every one hundred thousand persons living, was reduced to one thousand six hundred and twenty-eight in 1861, and further, to one thousand six hundred and fourteen in 1862. In 1863 the crisis had passed; after a bountiful harvest the people began to think more favorably of their prospects, and marriage proceeded at an augmented rate, the proportion to every one hundred thousand amounting to one thousand six hundred and eighty-eight."

The marriage-rate in Scotland, in the year 1864, was 7.2 per one thousand living, or one thousand four hundred and forty per-

sons married to one hundred thousand. In 1865 the rate was 7.5 per one thousand, or one thousand five hundred persons to one hundred thousand living.

In the city of Boston, the marriage-rate in 1864 was 15.31 per one thousand inhabitants, or three thousand and sixty-two to one hundred thousand. This is an unusually high marriage-rate, and it affords evidence of industrial and commercial prosperity. The State of Massachusetts, in 1847, had one couple married in every ninety eight of the population; but in the eleven years ending 1863, there were registered an average of one marriage in one hundred and eighteen inhabitants.

It is observed, the world over, that the proportion of marriage is greater in cities than in rural districts. New York and Brooklyn, undoubtedly, conform to this general law. By referring to the foregoing abstract showing the gradual increase in our monthly registration of marriages, it will be perceived that in the month of October returns of 753 marriages (of 1,506 persons) were rendered to the Board of Health. Estimating the resident population of the city at 800,000, this would be equivalent to a yearly marriage rate of $1,129\frac{1}{2}$ marriages to 100,000 inhabitants, or one marriage in 88.53 persons.

We have reason to believe that in the Metropolitan district the marriage rate is somewhat higher than 1 in 88. What the actual rate is will be known only when the official returns by clergymen and magistrates are completely and promptly made to the Bureau of Vital Statistics. We may regard the experience of this Bureau as being particularly instructive in respect to the fact that, with only the influence of an exact system and the plain instructions that accompany it, every religious sect favors the faithful execution of the marriage registration law, and the returns of the clergymen have, in seven or eight months, reached a degree of completeness that places the civil registration of marriages in New York on a favorable footing for comparison with similar records in the other great cities of the world. Complete and regular returns and public registration of marriages give the basis for estimating the ratio of marriages yearly to population. This ratio being higher, and marriage relatively more frequent, in a given population in city than in rural life, it was not surprising that the rate in New York, in October, exceeded 11 in 1,000 per annum.

Boston and Providence have very complete registration of mar-

riage. In the latter city the average ratio of marriages to population, the past ten years, has been $12\frac{1}{4}$ in 1,000. In Boston the average has for ten years past been about $15\frac{1}{3}$ in 1,000. In London the ratio of marriage to population is $10\frac{1}{3}$ to the 1,000, nearly. In all England, the ratio averages about $8\frac{2}{3}$ to the 1,000. In France it gives 8, and in Austria $8\frac{1}{2}$ to the 1,000.

The results of marriage registration in the Metropolitan sanitary district the ensuing year should be complete; the actual ratio of marriages to our population will then be known, and this branch of our vital statistics will begin to have practical value.

I am happy to report that the clergymen and magistrates of the two cities are beginning to make very perfect returns of all that the Bureau's forms of registration require.* All ecclesiastical denominations cordially approve, but somewhat unequally obey the law.

* The following circular was issued May 10th, and produced beneficial results :

METROPOLITAN BOARD OF HEALTH, }
BUREAU OF RECORDS AND VITAL STATISTICS, }
301 MOTT STREET, NEW YORK, May 10th, 1866. }

To Rev.

SIR: By direction of the Metropolitan Board of Health, I forward to you a few copies of the new Form for the Legal Certificate of Marriage, and respectfully ask your attention to the several blanks that need to be filled out in the Certificate of each Marriage solemnized by you.

It will be observed that in this Certificate there are a few points upon which information may not in all cases be obtained, but such exceptions will be few, and they must not be permitted to impair the definiteness and general value of Marriage Registration. The faithful record of the facts called for in this Marriage Certificate and Record may, in any case, prove beneficial, not only to the persons who have entered into the Marriage contract thus registered, but to their children, the protection of whose interests, both in regard to SOCIAL STATUS and HEIRSHIP, is one of the chief objects of such registration.

The Board of Health has adopted measures for insuring the highest degree of accuracy and thoroughness in its registration of Marriages, Births and Deaths. And it appeals to you for your influence as well as your example in securing prompt and scrupulously exact reports for the registration required by the new Sanitary Code.

Believing that every Clergyman and Magistrate, who reflects upon the IMPORTANCE of this registration, will desire to do all in his power to render implicit obedience to the requirements of the law, the Board of Health invites attention to the precise words of the statutes.

[Extract from the General Statutes of the State of New York, relating to Marriages.]

(CHAPTER VIII., § 9, REVISED STATUTES.)—"It shall be the duty of every Minister, Priest or Magistrate, required to solemnize a Marriage, to ascertain:

"1. The Christian and surnames of the parties, their respective places of residence, and that they are of sufficient age to be capable in law of contracting marriage.

"2. The names and places of residence of two of the attesting witnesses, if more than one be present, and if not, the name and place of residence of each witness.

"He shall enter the facts so ascertained, and the day on which such marriage is solemnized, in a book to be kept by him for that purpose."

[Assem. No. 241.]

Relation of Marriage to Health.—At a period in our civic life when the expenses of living, no less than the unhealthy sentiments of fashionable society, tend to discourage marriage at the expense and peril of health and virtue, the sanitary adviser need not fear that his knowledge and suggestions will be unwelcome or unheeded because of the growing obstacles to matrimonial and family life in our cities. But our words on this subject shall be few; for the very incomplete records of marriage, and great defects of all the former registrations of the social condition of the persons whose deaths are on record in this bureau, give but little information touching the question of the relative rates and ages of death in the married and unmarried respectively.

The French government has furnished conclusive statistics regarding the benign results of marriage upon longevity and freedom from disabling sicknesses. We extract the following facts from the French tables of M. Legroyt, and from the just deductions thereon by Dr. Wm. Farr, in a profoundly interesting analysis of the vital statistics relating to this subject, as presented by him to the social science association.

The average rates of Mortality in the Married Men and in Bachelors, in the entire population of France, estimated upon the 1,000 of each, in the several decennial periods of marriageable life.

Ages.	Married.	Unmarried.
20 to 30 -----	6.5 -----	11.3 -----
30 to 40 -----	7.1 -----	12.4 -----
40 to 50 -----	10.3 -----	17.7 -----

(§ 10.) "If either of the parties between whom the marriage is to be solemnized shall not be personally known to him, the Minister or Magistrate shall ascertain to his satisfaction the identity of the respective parties."

(From § 13, Chap. 74, Session Laws, 1866.)—"And for every omission of any person to make and keep the registry required by the acts referred to in this section, and for every omission to report a written copy of the same to said Board within ten days after any Birth or Marriage provided to be registered, any person guilty of such omission shall be liable to pay a fine of ten dollars, which may be sued for and recovered in the name of said Board."

This law secures the preservation in *duplicate* of the Marriage Record. The blank forms which are supplied to clergymen and magistrates by this Bureau, are prepared in duplicate, and so arranged in a stitched book as to enable the person officiating to return the *certified* copy while he retains the other in a permanent Register.

With furnishing to the married couple a transcript of the certificate, this Bureau has nothing to do, except when questions of legal or historical importance arise. A copy of the Marriage Certificate should be given to the couple at the time of the ceremony. Scrupulous care and accuracy should be given to the writing of the names of persons married.

On behalf of the Board of Health, Respectfully yours,

ELISHA HARRIS, M. D., Registrar of Vital Statistics.

Ages.	Married.	Unmarried.
50 to 60 -----	18.3 -----	29.5 -----
60 to 70 -----	35.4 -----	49.9 -----

Mortality per 1,000 among married and unmarried women.

Ages.	Married.	Unmarried.
20 to 25 -----	9.8 -----	8.5 -----
25 to 30 -----	9.0 -----	9.2 -----
30 to 40 -----	9.1 -----	10.3 -----
40 to 50 -----	10.0 -----	13.8 -----
50 to 60 -----	16.3 -----	23.5 -----
60 to 70 -----	35.4 -----	49.8 -----

Comment upon such results of an exhaustive analysis of the vital statistics of the married and the unmarried, and throughout a long period, in a population of 36,000,000, is needless. The information is practically important.

Though the successive generations of our race are ever brought forth by pains that, in mothers, if in girlhood under twenty years of age, make such premature maternity a discount on life's chances, statistics prove that after the mature womanhood of twenty-three years is reached, the mother finds that her marriage and maternity give such a *premium on life* as should silence anxiety and forebodings, and should stamp anew with burning infamy the petrifying crime against God and nature, by which the divinely appointed fruit of matrimony is wickedly destroyed. Against this besotted crime of abortion, in self-blighted mothers, the medical profession has set the sharp visage of its indignation. The abettors of this great wrong against God's laws and woman's welfare are guilty of a double homicide, and they should receive the swift punishment their crime deserves.

The greatly improved resources of medical and obstetrical science have so enhanced the chances of maternal life and safety, that it now becomes a pertinent question whether society should any longer delay to require, by law, the proper education of such midwives and nurses as are permitted to assume professional care of mothers in confinement. Great cities, and the State itself, may wisely ordain any human agencies that shall prevent life being nipped in the bud, and give increased safety and health to the wives of the virtuous poor, by whose industry and increase the growth and riches of a people are maintained.

Whoever will examine the vital statistics of the married in any

city or nation, will find that, after taking into account all the perils of maternity, always needlessly great among the poor, from want of skillful care and nursing, and all the possible infelicities of married life, "Marriage is a healthy estate. The single individual is more likely to be wrecked on his voyage than the lives joined together in matrimony."*

REGISTRATION OF BIRTHS.

For the practical purposes of a good sanitary government, the vital statistics and hygienic conditions connected with the natural increase of population, and with the waste and the preservation of infantile life, should be constantly known and registered. Besides these hygienic aspects of birth registration, there are other considerations, affecting the economical and social interest of society, in which the State, the family, and every individual member of society, even the new born child, and the lowliest mother or father, has sacred rights to be guarded.

In the laws of New York, enacted in 1847 and 1853, as regards the State, and in 1866, as applying them in the five counties of the Metropolitan district, this State has recognized the obligations we now mention. New York, as a State, intended to provide for and maintain an effectual system of registration of the successive generations of her population. But the well-intended vital registration laws of 1847 and 1853, have utterly failed in their object. The people have remained alike ignorant and indifferent in regard to the purposes and obligations of such public records.

As the method for rigidly enforcing these laws throughout the Metropolitan district is nearly complete, we will embrace this opportunity briefly to set forth the experience and plans of this bureau, as authorized by the Board of Health, in this branch of registration, and, at the same time, will state the essential facts that directly concern the State, and the individual communities, or families, in regard to such registration. And it should here be mentioned that, during these first eight and a half months of the present method of operation, it has been deemed expedient to discover and prepare the most practicable methods for the effectual registration of all births and marriages that occur in the district, rather than at once to seek success in this work by any coercive measures.

The two events in human existence that, with few exceptions,

* See Papers by Dr. Wm. Farr, presented to the Social Science Association, 1858.

are hallowed by special religious ceremonials in the church of God, were not to be rudely treated by accredited guardians of the public interest; nor were the delinquencies of clergymen and physicians to be instantly arrested without preparatory and mutual counsels. Such counsels have now paved the way to a *rigid enforcement* of the birth and marriage registration.

Upon ordering an inspection of the birth registers of the city of New York, at the organization of this bureau last spring, it was found that only one hundred and eleven names of infants had been recorded in the year 1865, and that five thousand and twenty-two imperfect certificates or returns—in loose pages—remained to be entered on the registers for that year, as in the case of the marriage registry, for many months. Brooklyn, and the other portions of the Metropolitan district, were destitute of birth registries, except that a few scattering records of births had been made in some of the towns, under the statutes of 1847 and 1853. For example, in certain towns of Westchester county, a small premium had, for two or three years, been paid the physician for each certificate of a birth, and a few such returns had been recorded. In the city of New York, fines had been threatened and imposed, for neglect to make returns, and an expensive class of messengers and orders had been resorted to, without avail.

In laying the foundation for an efficient system of birth registration, the following considerations and plans have governed the procedures of this bureau :

1. To encourage all medical practitioners and midwives to preserve a memorandum of every birth which the law would require them to report to the bureau. And to this end, all blanks for the birth returns were printed in the form of *duplicates*, with direction to tear off one, and retain the duplicate in the stitched book of forms, which the bureau supplied. As in the marriage returns, the duplicate and formal preparation of the certificate aided the great practical object and the success we had in view.

2. The purposes of sanitary government, as well as the interests of the registered children, and the rights of their kindred, require that the system and scope of this branch of vital statistics and registration, should be so accurate and comprehensive, that both lineage and the law of population could be accurately traced in the registration of successive generations. Hence our forms and requirements for birth returns have been devised to meet these interests of society.

The intelligent approval of citizens and physicians has been accorded to the methods and objects of the bureau in this branch of registration. The methods are complete ; the returns, as far as received, are now nearly faultless, and exhibit conscientious regard for the law by parents and accoucheurs. The law of registration must now be rigidly enforced.

The subjoined table exhibits a summary of birth registration in the cities of New York and Brooklyn, from April 1 to October 1, 1866.

ABSTRACT OF TOTAL REGISTRATION OF BIRTHS DURING THE SIX MONTHS ENDING SEPTEMBER 30, 1866.

In the City and County of New York.

Total number of births registered.	Total number of males.	Total number of females.	Total number of whites.	Total number of blacks.	NATIVITY OF PARENTS.				
					Total number of natives.	Total number of foreign.	Foreign father only.	Foreign mother only.	Not stated.
5,745	3,062	2,683	5,711	34	863	3,246	398	339	894

In Brooklyn and its suburbs.

1,991	1,020	971	1,967	24	776	807	213	137	37
-------	-------	-----	-------	----	-----	-----	-----	-----	----

In the above table, the first fact that deserves notice is that of the decided preponderance of birth returns of foreign parentage in the city of New York. The next fact that deserves remark is, that the number of returns is manifestly incomplete. If we estimate the population of New York at 800,000, it will be seen that the 5,745 births in the six months, as above stated, would give a birth-rate equivalent only to 1 birth in 69.6 of the population in the year. But if we look at the returns in the last month (October), as shown in the abstract below, we shall find a more satisfactory record, though that is far below the rate of increase that the city's population owed to the law of population growth.

The parents of foreign births generally desire to have the birth of their offspring registered. Most of the European countries enforce the birth registration, and in their courts of justice all questions affecting heirship and lineage are decided by the civil registry of the birth, or of the parents' marriage and the birth of their legitimate offspring. Not unfrequently the Bureau receives

appeals from foreign-born parents for the registration of a birth that has occurred a few weeks previously, while the mother was visiting Europe or returning on sea. Unquestionably the State will eventually authorize the compliance with such just requests. The State of Massachusetts has provided for the local registration of both marriages and births of her citizens, when occurring away from the legal home of the persons requiring such registration, provided no other municipality or town in the commonwealth registers the same event. Some provision of this kind is necessary for securing a complete registration. Many children of our metropolitan families are born at summer residences, beyond the limits of this district. Such completeness of registration, both of marriages and births, is essential to accurate deductions concerning the laws of population and social progress.

As was remarked concerning the influences by which the Board of Health has secured the marked and steady increase of the marriage registry, month by month, so, regarding the increase and popular interest in the birth registry, no coercive measures have yet been resorted to. The methods and purposes of this branch of vital registration have been carefully set forth, and the cordial co-operation of the medical profession has been sought and obtained. The following abstract shows the total number, and the rate of increase of the birth registration, month by month:

Number of Births in the Cities of New York and Brooklyn during the ten months ending November 1, 1866, with monthly increase from the average (444) monthly Return of Births in New York city, in the year 1866.

1866. Month.	City of New York.		City of Brooklyn.
	Total Births Registered.	Increase in Registration.	Total Births Registered.
January	478	34	None.
February	472	28	None.
March	545	101	None.
April	583	139	49
May	921	477	341
June	915	471	378
July	945	501	377
August	1,236	792	433
September	1,145	701	413
October	1,175	731	398
Total	8,415	3,975	2,389

The registration in the three months ending November 1st, shows that upon the population of New York city as given in the census of 1865, the birth-rate was equivalent to 19.6 births to the 1,000 inhabitants, or as 1 to 37. Brooklyn is at present receiving a rate of birth returns nearly equal to that in New York. By the influence now in operation, the bureau may be able to obtain 1,400 or 1,500 full returns of births each month, in New York, and 600 or 700 in Brooklyn and its outlying villages. The number would fall 40 per cent. short of the births that probably should be returned to the bureau monthly; for this expected and now promised success in gathering the returns by the voluntary method would be equal only to 25.28 births annually per 1,000 of the population. We must here mention that the still-births are recorded separately, as a class of special deaths.

In a table on a subsequent page, it is shown that Boston has a birth-rate of 31.3 per 1,000, and London of 35.51 per 1,000. And unless criminal abortion and child murder is a more wide-spread vice than we believe it is, and unless matrimony is a farce, this bureau should have returns of twenty-seven to thirty thousand births annually in New York, and half as many in Kings county. We thus refer to the fundamental law of population, in respect of natural increase in family life, in order to lay down the postulates by which the public and the Board of Health itself may determine, whether the registration laws are properly obeyed, on the one hand, and, on the other, whether social progress in this district is, or is not, in a normal and healthy way. The registrar would respectfully recommend that the laws of the State, concerning birth and marriage registration be, from this time forth, very rigidly enforced. So far as the means at the command of the bureau of vital statistics are concerned, no care or labor shall be spared to give full effect to these laws within the Metropolitan sanitary district.

To estimate the actual number of births in our population, in the absence of the complete birth record, in any past year, we may properly take for guides the birth records of Boston, Providence and London, cities that make very complete registration. We estimate the birth-rate as we do the death-rate, by the ratio to one thousand of total population.

BIRTH-RATES.

Birth-rates to total population.

In London.	In London.	In all Scotland.	In Boston.	In State of Massachusetts.	In Providence, R. I.
Year 1863.	Year 1865.	Year 1865.	10 years, 1855-64.	9 years, 1856-64.	11 years, 1855-65.
39.35 per 1,000, or 1 to 27.43.	35.51 per 1,000, or 1 to 28.16.	36.07 per 1,000, or 1 to 27.77.	31.3 per 1,000, or 1 to 32.	27.5 per 1,000, or 1 to 36.	32.67 per 1,000, or 1 to 32.7.

These ratios of births, in populations that best compare with New York, warrant the conclusion, that during the year 1865, with a census return in New York and Brooklyn of 1,022,495 inhabitants, there were, or should have been, at least 34,000 children born.

The census returns for the two cities give 262,727 as the total number of married persons in New York, and 109,036 in Brooklyn. The probable (actual) birth-rate in these cities, in 1865, would allow a *pro rata* of nine births in that year, to every one hundred married persons.

Still-births.—The dead-born, whatever the period of utero-gestation, are, by existing regulations in this district, buried with the formality of a special permit from this bureau. The effeminate habits of city life, the ceaseless anxieties of the wives of the poor, and, to some unknown extent, the crime of voluntary artificial abortion, lend importance to the records we preserve concerning these blighted births. The men and women who make a business of child-killing by their murderous drugs and instruments, are the only persons that have yet objected to the special returns we require concerning these dead. This class of records is not subject to promiscuous inspection. It is hoped it will at least help diminish a sinful practice that is sending more women to graves of sorrow than all the pangs of natural child-birth. In these records, the Board of Health and the State fix the seal of sacredness on life. The total number of burials of still-born offspring in New York from April 14th to November 1st, 1866, was 1,049. The returns of causes, the period of utero-gestation, etc., as regards these dead-born, are of permanent value.

POPULATION.

On subsequent pages we present synoptical views of the population of New York and Brooklyn, considered with regard to ages, sexes, occupations, nativity and ward distribution in the cities. The remarkable rate of increase of population in the city of New York is illustrated by the following table :

Percentage of increase of population in the city of New York in each census period since 1790.

YEARS.	1800.	1810.	1814.	1820.	1825.	1830.	1835.	1840.	1845.	1850.	1855.	1860.
Total increase in each decennial period, per cent.	83	59	1	30	34	19	36	17	16	39	20	29
Mean annual increase between periods, per cent.	8.8	5.9	0.2	5.0	6-8	3.8	7.2	3.4	3.2	7.8	4.0	5.8

Though it is an established law in vital statistics, that "a population increases in regular geometrical progression when the births exceed the deaths, and the ratios of the births and the deaths to the population remain constant," the population of this metropolis has been augmented by more than a geometrical ratio of increase since the nineteenth century began. The four other counties now comprised in the Metropolitan district begin to follow the same rate of rapid growth of population. The following note from Dr. F. B. Hough, the superintendent of the last census of the State, sets forth the facts that especially affect the sanitary aspects of this rapid growth and overflowing of the metropolitan population :

"The *future* rate of increase of New York and its dependencies as a great metropolis, may be safely estimated as high as seven per cent. per annum ; although the distribution among wards, and even among counties, depends upon facilities of communication and the demands and location of business.

The island of Manhattan, the west end of Long Island, the lower part of Westchester county, the neighboring shores of New Jersey, and the north half of Staten Island, are destined to receive an aggregate population greater than that of any metropolis now existing, or that shall then be existing in the world. We do not borrow from imagination; for, taking the last census returns of the city of New York, the city of Brooklyn, a third of Westchester, a third of Queens, and half of Staten Island, as constituting the metropolis, we have the following absolute and comparative numbers :

Years.	Aggregate popu- lation.	Percentage of in- crease in last decennial period.	Annual per- centage of increase.
1830 -----	240,827	----	----
1840 -----	392,147	62.8	6.28
1850 -----	683,658	76.9	7.69
1860 -----	1,145,338	65.1	6.51

“ While we can foresee nothing that will have a tendency to check the general growth of New York and its dependencies, as a whole, there are, doubtless, many things, still unknown, which will tend greatly to accelerate its growth in population and wealth.”*

It is not for this Bureau to indulge in vague guesses at what are the errors in the census of the population, though the manifest faults and deficiencies of the census, as hitherto taken, very greatly embarrass the proper uses of vital statistics. We must, for the present, regard the last census as the only legitimate basis for our official comparisons of vital records of the metropolitan population. That census furnishes the following totals for the two cities and the several towns in the five counties of the district.

* See *Report of Council of Hygiene*, Citizens' Association of New York, page 122.

Summary of population in the Metropolitan Sanitary District, by towns cities and counties (Census of 1865).

TOWNS, CITIES AND COUNTIES.	Total populat ⁿ .	MALES.		FEMALES.		CIVIL CONDITION.				BORN IN—	
		White.	Colored.	White.	Colored.	Single (never married).	Married.	Widow- ers.	Widows.	United States.	Foreign countries.
City and county of New York	726,354	344,165		352,189		413,118	262,276	7,877	32,554	407,556	313,201
City of Brooklyn	296,378	139,416	1,773	152,773	2,416	172,452	109,036	2,986	11,904	187,589	107,851
Towns of Kings county:											
Flatbush	2,778	1,251	88	1,340	99	1,717	935	32	94	1,873	901
Flatlands	1,904	942	71	833	58	1,162	691	1	50	1,535	369
Gravesend	1,627	765	93	696	73	944	596	30	57	1,178	447
New Lots	5,009	2,428	36	2,500	45	2,822	2,025	46	116	2,974	2,007
New Utrecht	3,394	1,562	52	1,723	57	2,019	1,189	40	146	2,084	1,294
Total of Kings county	311,090	146,364	2,113	159,865	2,748	181,116	114,472	3,135	12,367	197,243	112,869
Towns of Westchester county:											
Bedford	3,465	1,627	52	1,731	55	1,925	1,369	54	116	3,120	330
Cortlandt	9,993	4,905	71	4,630	87	5,539	3,390	114	350	7,808	1,547
East Chester	5,615	2,734	23	2,823	30	3,338	2,026	63	188	3,674	1,929
Greenburgh	8,463	3,892	72	4,418	81	4,973	3,072	104	314	6,030	2,410
Harrison	1,380	645	87	560	88	850	463	14	44	1,141	230
Lewisborough	1,653	823	7	820	3	863	695	21	69	1,554	97
Manaroneck	1,393	662	16	656	19	821	513	11	48	1,000	379
Morrisania	11,691	5,645	33	5,665	48	6,749	4,474	120	348	7,403	4,270
Mount Pleasant	4,889	2,128	45	2,184	32	2,548	1,600	66	175	3,515	873
New Castle	1,879	877	18	948	36	1,094	700	25	60	1,058	171
New Rochelle	3,968	1,175	102	2,008	63	2,316	1,455	52	145	2,801	1,161
North Castle	2,198	1,015	55	1,068	60	1,252	828	29	89	2,055	134
North Salem	1,522	735	17	754	16	843	591	31	57	1,317	174
Ossining	6,223	3,034	73	2,965	51	3,839	2,073	58	253	4,610	1,563
Pelham	1,043	495	7	532	9	638	350	11	41	778	257
Poundridge	1,299	649	2	647	1	708	519	24	48	1,253	41
Bye	4,675	2,168	81	2,353	73	2,723	1,690	63	199	3,549	1,100

Summary of population in the Metropolitan Sanitary District, &c.—Continued.

TOWNS, CITIES AND COUNTIES.	Total populat'n	MALES.		FEMALES.		CIVIL CONDITION.				BORN IN	
		White.	Colored.	White.	Colored.	Single (never married).	Married.	Widow- ers.	Widows.	United States.	Foreign countries
Searsdale	557	248	8	287	14	352	171	11	23	401	154
Somers	1,695	860	23	783	29	946	672	26	51	1,494	201
Westchester	3,929	1,929	32	1,919	46	2,382	1,583	42	119	2,593	1,305
West Farus	7,333	3,514	47	3,661	51	4,506	2,500	63	264	4,768	2,513
White Plains	2,122	997	31	1,059	36	1,302	685	32	103	1,622	457
Yonkers	12,756	6,074	63	6,564	54	7,474	4,479	122	431	7,841	4,883
Yorktown	2,559	1,242	30	1,259	28	1,448	994	44	73	2,280	235
Total of Westchester county	101,197	48,533	1,000	50,633	1,031	59,703	36,683	1,200	3,611	74,315	26,394
Towns of Richmond county:											
Castleton	7,683	3,711	53	3,884	35	4,810	2,490	86	297	4,638	3,023
Middleton	6,866	3,166	78	3,496	126	3,948	2,540	66	311	3,973	2,855
Northfield	5,201	2,511	42	2,603	45	3,118	1,842	63	178	4,428	773
Southfield	4,407	2,014	21	2,347	25	2,671	1,539	39	158	2,495	1,880
Westfield	4,052	1,847	98	1,987	120	2,803	1,543	49	157	3,439	611
Total of Richmond county	28,209	13,249	292	14,317	351	16,851	9,954	303	1,101	18,973	9,142
Towns of Queens county:											
Flushing	10,813	4,867	303	5,331	312	6,452	3,874	117	370	7,206	3,489
Hempstead	11,764	5,605	184	5,787	188	6,765	4,486	143	370	10,479	1,146
Jamaica	6,777	3,171	177	3,233	196	3,900	2,512	102	263	5,296	1,476
Newtown	13,891	2,276	341	2,384	334	8,220	5,046	184	441	8,244	5,329
North Hempstead	5,335	6,660	133	6,939	159	3,102	2,000	63	170	4,402	933
Oyster Bay	9,417	4,214	400	4,343	460	5,308	3,656	129	324	7,597	1,770
Total of Queens county	57,997	26,793	1,538	28,017	1,649	33,747	21,574	738	1,938	43,224	14,143
Total in cities and towns of metrop'n district..	1,224,847	723,463		640,800		704,535	444,959	13,253	51,671	741,311	475,749

Population of the city of New York by ages and sexes.

WARDS.	Under 5 years of age.		5-10.		10-15.		15-20.		20-25.		25-30.		30-35.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
First.....	668	678	607	626	470	468	315	411	446	561	452	524	471	515
Second.....	64	59	67	50	45	42	41	57	56	98	42	79	43	60
Third.....	163	161	137	131	121	122	115	138	199	295	212	281	191	189
Fourth.....	1,087	1,159	1,227	1,127	893	825	620	693	658	860	713	930	897	897
Fifth.....	1,120	1,119	1,044	1,012	735	833	589	756	915	941	911	1,007	844	945
Sixth.....	1,252	1,212	1,361	1,342	1,071	1,021	729	874	750	941	887	977	791	942
Seventh.....	2,561	2,583	2,331	2,233	1,739	1,795	1,299	1,688	1,653	2,112	1,679	1,949	1,623	1,678
Eighth.....	1,806	1,790	2,039	2,012	1,230	1,328	1,051	1,746	1,260	1,954	1,558	2,044	1,454	1,323
Ninth.....	2,144	2,108	2,065	2,085	1,864	1,951	1,573	2,047	1,678	2,560	1,711	2,230	1,557	1,832
Tenth.....	2,423	2,288	1,909	1,936	1,310	1,322	1,021	1,941	1,225	1,892	1,643	1,758	1,617	1,513
Eleventh.....	4,779	4,728	4,297	4,245	3,191	3,229	2,021	2,517	1,841	2,514	2,127	2,528	2,230	2,546
Twelfth.....	1,758	1,638	2,122	1,937	2,142	1,549	1,633	1,525	887	1,590	904	1,295	848	1,144
Thirteenth.....	1,942	2,110	1,726	1,751	1,260	1,370	952	1,221	931	1,318	1,115	1,230	1,099	1,113
Fourteenth.....	1,495	1,408	1,412	1,386	1,084	1,152	802	1,126	1,027	1,346	1,109	1,206	1,013	1,122
Fifteenth.....	926	905	1,051	1,037	973	955	865	1,479	1,178	1,279	1,259	1,886	1,088	1,558
Sixteenth.....	2,490	2,573	2,383	2,570	1,957	2,109	1,562	2,253	1,548	2,648	1,503	2,505	1,380	2,178
Seventeenth.....	6,116	6,006	5,245	5,326	3,824	3,773	2,531	3,318	2,653	4,192	3,206	4,129	3,330	3,882
Eighteenth.....	2,766	2,508	2,918	2,719	2,217	2,428	1,739	2,202	1,602	3,306	1,778	3,112	1,775	2,753
Nineteenth.....	2,549	2,430	2,756	2,410	2,254	1,896	1,345	1,999	1,366	2,360	1,395	2,296	1,837	1,914
Twentieth.....	4,254	4,205	4,062	3,991	2,989	3,323	2,200	3,078	2,219	3,488	2,296	3,239	2,193	2,873
Twenty-first.....	2,062	2,091	2,271	2,207	1,788	1,935	1,394	2,097	1,239	2,568	1,368	2,681	1,337	2,184
Twenty-second.....	3,432	3,344	3,190	3,292	2,558	2,627	1,786	2,302	1,554	2,409	1,627	2,337	1,659	2,164
Total.....	47,857	47,163	46,250	45,475	35,715	36,053	26,183	34,928	26,885	42,522	29,505	40,223	28,612	35,355

Population of the city of New York, &c.—Continued.

WARDS.	35-40.		40-45.		45-50.		50-55.		55-60.		60-65.		65-70.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
First	369	404	283	347	245	176	203	150	65	77	80	87	19	37
Second	70	58	40	39	50	23	30	19	12	15	30	8	6	4
Third	145	107	105	109	96	43	80	49	34	14	132	140	46	53
Fourth	673	694	625	584	501	334	377	287	141	134	173	150	64	69
Fifth	862	747	629	547	633	326	350	278	171	155	189	189	67	57
Sixth	760	784	697	665	534	427	361	339	195	166	264	249	129	144
Seventh	1,386	1,271	1,127	1,116	1,058	703	712	616	297	325	364	349	161	167
Eighth	1,353	1,323	774	716	829	660	351	311	312	335	161	167	88	112
Ninth	1,411	1,492	1,174	1,220	1,119	860	687	745	392	408	315	396	165	203
Tenth	1,444	1,209	991	840	910	582	503	465	243	245	224	227	91	127
Eleventh	2,269	2,339	1,683	1,824	1,752	977	995	977	607	526	466	490	241	248
Twelfth	889	939	745	805	797	490	577	453	252	192	240	206	112	113
Thirteenth	974	996	685	778	789	593	469	473	273	246	240	230	126	130
Fourteenth	909	878	724	784	684	515	443	436	172	146	243	206	76	80
Fifteenth	950	1,062	801	997	777	625	569	535	283	231	275	266	140	111
Sixteenth	1,412	1,658	1,123	1,448	1,185	930	790	862	386	434	409	499	161	248
Seventeenth	3,383	3,266	2,543	2,466	2,249	1,461	1,314	1,304	649	670	633	692	270	321
Eighteenth	1,730	2,048	1,377	1,676	1,311	1,010	991	933	404	395	412	488	153	208
Nineteenth	1,531	1,630	1,190	1,318	1,227	847	815	694	379	349	360	371	198	168
Twentieth	2,222	2,491	1,761	2,025	1,909	1,350	1,213	1,097	547	588	517	559	279	279
Twenty-first	1,237	1,676	1,058	1,429	1,044	877	756	710	347	336	329	389	176	185
Twenty-second	1,713	1,751	1,390	1,494	1,541	937	948	894	425	343	392	378	163	185
Total	27,692	28,823	21,525	23,227	21,240	14,926	13,534	12,587	6,586	6,367	6,198	6,514	2,779	3,095

Population of the city of New York, &c.—Continued.

WARDS.	70-75.		75-80.		80-85.		85-90.		90-95.		95-100.		100 & Upw'ds.		Unknown.		Totals.
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	
First.....	21	17	3	3	6	12	.....	.....	1	1	1	.....	.....	.....	17	15	9,852
Second.....	3	4	.....	3	.....	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,194
Third.....	8	4	2	1	2	9	1	.....	.....	.....	1	.....	.....	1	28	.....	3,367
Fourth.....	24	51	12	12	7	9	1	.....	5	1	1	.....	.....	.....	4	5	17,352
Fifth.....	39	52	18	18	15	44	3	2	1	.....	2	.....	2	.....	50	44	18,175
Sixth.....	36	47	16	5	2	9	1	2	2	2	.....	.....	.....	.....	6	13	19,754
Seventh.....	99	107	38	46	13	32	5	4	2	3	1	2	.....	1	5	4	36,962
Eighth.....	38	56	20	39	9	15	4	9	.....	.....	.....	.....	.....	.....	46	47	30,098
Ninth.....	86	170	43	76	18	46	5	10	3	5	1	.....	.....	.....	24	11	88,502
Tenth.....	53	78	19	45	13	13	2	6	4	.....	.....	1	.....	.....	2	.....	31,537
Eleventh.....	126	154	58	70	31	31	11	13	.....	6	1	.....	.....	.....	34	57	68,953
Twelfth.....	59	77	33	49	20	31	.....	7	3	3	.....	.....	.....	.....	74	121	28,259
Thirteenth.....	61	76	24	25	13	16	4	6	1	3	1	.....	.....	.....	6	4	26,388
Fourteenth.....	51	68	25	26	13	20	2	8	2	1	.....	2	.....	.....	85	55	23,382
Fifteenth.....	83	118	41	61	15	38	12	12	3	3	.....	2	.....	.....	23	39	25,572
Sixteenth.....	108	149	50	89	24	38	10	24	1	6	1	.....	.....	2	32	26	41,972
Seventeenth.....	163	209	80	89	25	42	14	11	5	8	1	.....	.....	1	73	88	79,563
Eighteenth.....	112	147	54	76	28	46	5	13	3	13	4	1	.....	1	33	58	47,613
Nineteenth.....	110	144	57	67	29	46	11	15	2	6	1	5	3	1	27	18	39,945
Twentieth.....	150	205	81	89	31	47	13	13	1	6	4	4	1	2	8	2	61,884
Twenty-first.....	98	137	36	60	22	39	8	16	3	4	1	.....	.....	.....	21	163	38,669
Twenty-second.....	102	131	43	55	22	37	11	10	3	1	.....	.....	.....	3	80	98	47,361
Total.....	1,630	2,201	748	1,004	358	585	123	191	45	71	14	27	8	13	678	869	726,354

Population of the city of New York, by places of birth (Census of 1865).

WARDS.	United States.	Foreign.	At sea.	Unknown.	Total.
First	4,212	5,594	3	43	9,852
Second	593	600	.....	1	-1,194
Third	1,461	1,875	1	30	3,367
Fourth	7,537	9,757	2	56	17,352
Fifth	9,395	8,426	4	350	18,175
Sixth	8,297	10,967	2	438	19,754
Seventh	18,918	18,040	4	.....	36,962
Eighth	18,277	11,435	4	382	30,098
Ninth	26,612	11,685	2	203	38,502
Tenth	15,645	15,749	2	141	31,573
Eleventh	31,267	27,481	5	200	58,953
Twelfth	18,604	9,341	3	311	28,259
Thirteenth	15,307	10,907	3	171	26,388
Fourteenth	10,832	11,720	1	829	23,382
Fifteenth	15,238	10,333	1	.....	25,572
Sixteenth	25,308	16,319	2	343	41,972
Seventeenth	39,932	39,169	4	458	79,563
Eighteenth	25,814	21,358	1	440	47,613
Nineteenth	23,486	16,118	3	338	39,945
Twentieth	36,616	25,074	7	187	61,884
Twenty-first	23,398	14,943	.....	328	38,669
Twenty-second	30,807	16,310	8	236	47,361
Total	407,556	313,201	62	5,535	726,354

DISTRIBUTION AND DENSITY OF POPULATION.

Though it has become an axiom in sanitary science that mortality increases, and that depreciation of health and vitality also increases, directly as the density of population increases, this fact is found to depend upon concomitant circumstances of crowded populations which may be controlled by human skill and foresight. The defective and unguarded sewerage, the accumulated refuse and ordure of masses of men and beasts, and the close packing of families in populous cities—the chief causes of excessive mortality in great cities—are not inevitable evils, for it is entirely practicable, by means of the wealth, the intelligence, and the concentration of preventive resources in a city, to overcome such causes of insalubrity.

That the death-rate of a metropolitan population, however vast, does not necessarily increase with the increasing density of the inhabited streets, is fully demonstrated in London. Its death-rate, and the chances of human life in it, have steadily increased the past thirty years. And this was wholly the result of systematic sanitary improvements in domiciles, in water supply, in drainage, and in the sanitary police of that metropolis. Still, the law of increased death-rates and sickness-rates, to increasing density of population, is found to hold true, except where special

and systematic sanitary care increases and keeps pace with the population growth. The following statistics compiled by Dr. Gairdner, the chief health officer of Glasgow, present this fact in a conclusive way:

Population to one square mile in sparsely peopled districts taken in England.	Deaths in 1,000 per annum.	Population to one square mile in districts taken in England.	Deaths in 1,000 per annum.
56	15	324	22
106	16	485	23
144	17	1,216	24
149	18	1,262	25
182	19	2,064	26
202	20	2,900	27 and upwards.
220	21		

CITY OF—	Average number of inhabitants to the acre.	Population to square mile.	Average number of square miles to each inhabitant.
London	38.7	24,768	125.1
Liverpool	93.3	59,712	51.9
Glasgow	83.7	53,568	57.8
Manchester	79.1	50,624	61.2
Dublin	66.9	42,816	72.3
Edinburgh	42.5	27,200	113.9
Bristol.....	34.5	22,080	140.8

The density of population in great cities varies exceedingly, and most of all it varies in different quarters of the same city. And in no other city is this fact more strikingly seen than in New York and Brooklyn.

Immigration and natural increase are filling up these five counties at a rate which warrant the conclusion, that before the end of the present century—in less than thirty years—the district will have a population of nearly or quite four millions. With such myriads of active fellow-beings rapidly enlarging the resources, the power, and the perils of the commonwealth, and wielding the social and commercial destinies of this metropolis, it is no vain or useless purpose of the sanitary government to study and preserve the vital records of these coming millions. The statesman of the present day, and of our country, recognizes the truth of Lord Bacon's postulate regarding the growth and quality of populations, that "true greatness of a state consisteth essentially in population and the breed of men." The State's care and regis-

tration of each branch of vital statistics cannot fail to produce benign results that would reach beyond the realm of mere statistics. The very formalities and public records by which such concern for the life and social welfare of the citizen is symbolized, always reacts most favorably upon the highest interests of society. Nor are the studies and practical deductions of vital statistics, and the laws of population, limited to bare records and numerical tabulations. In the words of a leading statist and hygeist of our day, "the more the doctrines of population are studied, the more deeply must be impressed upon the mind the sacredness of human life, and of the safeguards by which it has been surrounded by God and the laws."

The population and area tables, on a subsequent page, present this matter in an accurate manner. In London, the range of population density reads as follows, according to the Registrar General's Sixteenth Annual Report:

Districts or parishes.	Persons to square mile, Mean from 1841-1850.
London (the whole metropolis)	17,678
East London	175,816
The Strand	161,556
St. Luke's	151,104
Holborn	148,705
St. James', Westminster	144,008

The Metropolitan district of London extends over nearly one hundred and twenty-two square miles, and its three millions of inhabitants are distributed upon the whole area, at an average rate of about twenty-five thousand to the square mile.

The city of Philadelphia embraces within its limits about one hundred and six square miles; consequently, its population, if equally distributed over that area, would have a density of only about six thousand to the square mile. In that city, as in New York and Brooklyn, the most unhealthful districts conform, on the one hand, but in exceptional instances, to the law of density, and on the other, to the unwholesome chances of sparsely settled, undrained, and badly cleansed suburban districts.

In the city of New York, we have a population of nearly a million, irregularly distributed over the area of Manhattan Island, which comprises, in all, but little more than twenty-two square miles, or fourteen thousand five hundred and two acres. But, as less than one half of this is now occupied by built up blocks of

dwelling-houses, it is manifest that our city population is packed at the rate of nearly sixty thousand persons to the square mile. The subjoined statistics show that the population density ranges from less than five thousand to the square mile in the twelfth, to one hundred and forty-five thousand seven hundred and fifteen in the fourth and sixth wards. And in the latter wards nearly one half of the entire area is now occupied by warehouses and manufactories. The actual rate of crowding, therefore, in those tenant-house regions is close upon two hundred and fifty thousand to the square mile. And in the eleventh and thirteenth wards, in which storehouses have not yet encroached, the population density is one hundred and ninety thousand to the square mile.

The superficial area of the city of New York, south of One Hundred and Thirty-fifth street; also of the entire city by wards; rate of population to the square mile in each ward; also the pro-rata of square yards, in each ward, to each person.

WARDS.	Population.	No. of acres.	Number of square yards.	Square miles	Rate of population to the square mile.	No. of square yards to each person.
First.....	9,852	154	745,360	0.24	41,050	75 6-10
Second.....	1,194	81	392,040	0.12	9,950	328 3-10
Third.....	3,367	95	459,800	0.15	22,447	136 6-10
Fourth.....	17,352	83	401,720	0.13	133,477	23 1-10
Fifth.....	18,175	168	813,120	0.26	69,904	45 3-10
Sixth.....	19,754	86	416,240	0.13	151,954	21
Seventh.....	36,962	198	958,320	0.31	119,232	25 6-10
Eighth.....	30,098	183	885,720	0.29	103,786	29 4-10
Ninth.....	38,502	322	1,558,480	0.50	77,004	40 5-10
Tenth.....	31,537	110	552,400	0.17	185,512	17 2-10
Eleventh.....	58,953	196	948,640	0.30	196,510	16 1-10
Twelfth.....	28,259	3,480*	16,843,200*	5.44*	5,195*	596
Thirteenth.....	26,388	107	517,880	0.17	155,224	19 6-10
Fourteenth.....	23,383	96	464,640	0.15	155,880	19 9-10
Fifteenth.....	23,572	198	938,320	0.31	82,450	37 5-10
Sixteenth.....	41,172	384	1,858,560	0.60	69,933	44 3-10
Seventeenth.....	79,563	331	1,602,040	0.52	153,006	20 1-10
Eighteenth.....	47,613	593	2,870,120	0.93	51,197	60 3-10
Nineteenth.....	39,945	1,530	7,405,200	2.39	16,713	185 4-10
Twentieth.....	61,884	435	2,105,400	0.68	91,006	34
Twenty-first.....	38,689	472	2,284,480	0.74	52,255	59
Twenty-second.....	47,561	1,420	6,872,500	2.22	21,354	145 1-10
	726,354	10,722	51,894,480	16.75	43,364	71 4-10
Portion of Twelfth ward, north of 135th street.....		1,980	9,583,200	3.09	Rate of population to the square mile, including all unbuild-up portions.	Square yards of area to each inhabitant (estimated upon entire area of the city).
Area of parks included throughout the entire city.....		1,800	8,712,000	2.81		
Total area of city with its parks, streets and unbuild portions.....		14,502	70,189,680	22.65	32,068	96 6-10

* The irregular tongue of Manhattan Island, north of 145th street, remains comparatively unpopulated. Its area—1,800 square acres—gives to the Twelfth ward a total of 8½ square miles. The pro-rata of population upon total area of the ward would be 3.321 to the square mile, or 935 square yards to each inhabitant.

The superficial area of the city of Brooklyn, by wards. Rate of population to the square mile in each ward ; also the pro-rata of square yards, in each ward, to each person.

WARDS.	Population.	No. of acres.	No. of square yards.	Square miles	Rate of population to the square mile.	No. of square yards to each person.
First	6,128	81.25	393,250	0.13	47,138	64
Second	8,760	82.97	401,568	0.13	67,385	46
Third	8,890	126.56	612,562	0.19	44,450	69
Fourth	11,506	102.53	496,251	0.16	71,913	43
Fifth	17,320	105.47	510,468	0.16	104,824	29
Sixth	26,407	268.75	1,300,750	0.42	62,862	49
Seventh	15,968	461.72	2,234,718	0.72	22,178	140
Eighth	9,829	2,000.94	9,684,537	3.12	3,140	985
Ninth	23,443	2,935.00	14,205,400	4.59	5,108	605
Tenth	28,668	464.37	2,247,575	0.73	39,271	77
Eleventh	18,242	130.78	874,981	0.28	65,150	47
Twelfth	13,085	223.12	1,079,925	0.35	37,386	82
Thirteenth	17,791	203.44	984,637	0.38	55,597	53
Fourteenth	15,425	242.44	1,173,397	0.32	40,592	76
Fifteenth	11,449	196.84	952,723	0.31	36,932	83
Sixteenth	24,379	164.06	794,062	0.26	93,765	32
Seventeenth	10,234	707.19	3,422,782	1.10	9,304	334
Eighteenth	6,053	1,767.50	8,554,700	2.76	2,193	1,413
Nineteenth	8,055	300.00	1,452,000	0.47	17,138	167
Twentieth	13,380	287.34	1,390,744	0.45	31,067	99
Total	296,112	10,902.27	52,767,030	17.03	17,388	178

It was deemed necessary that these tabulations, showing the population, density and the distribution of area in the two cities should be accurately prepared, and kept constantly before the officers of the bureau of vital statistics. Like many other necessities of the bureau, this exigency has been met by extra official labors. In the absence of any trustworthy public records, we have resorted to exact mathematical reductions of the area of each ward in both cities, by triangulations from the maps of surveys that were reputed to be accurate as to the length and angles of streets. For necessary aid in this duty, our acknowledgments are due to James E. Serrell, Esq., city surveyor, in New York, and to Dr. R. C. Stiles and his assistants in Brooklyn.

Public parks being grand vitalizers to a city's inhabitants—truly the lungs of crowded districts—the table of their areas is presented for the purpose of showing the amount of this health giving portion of New York. No other comments are here required, to show what is the present and the prospective surface crowding in New York and Brooklyn. With pestilence menacing our cities, and with the world's immigration and ignorance filling up the low and insalubrious quarters of the Metropolitan district, the rate and the results of over crowding must be constantly observed, and its evils repressed and guarded by sanitary science. The problem of preserving the health of such population, and of controlling the pestilences they breed, is both difficult and important. And, as has been well said, "experience proves that the health of a city, like the sacred fire on the altar, requires the constant vigilance of its guardians, otherwise its flame expires." In the city of New York, sanitary science will be compelled, in a very few years, to show how two millions of people are to be kept in health upon an area of less than twenty square miles of dwelling space. The demand will not be made in vain; for, difficult as the problem is, it is entirely practicable to protect the health and give fresh air and domestic comfort to two hundred thousand people upon a single square mile. But, as we have seen this year, a population less than ten thousand to the square mile, on the very summit of the ridge west of the central park, dwelling where nature is most favored by constant breezes, yet in the atmosphere of their own excrement and refuse, is doomed to perish in enormous numbers, and by entire families, at the first breath of an epidemic. The problem of health in a crowded city can be solved only by the joint intelligence of the physician, the architect, and the sanitary

engineer. Hercules must cleanse, and Hygeia will guard the Metropolis. It is a mixed problem of air and water supply, of sewerage, cleanliness, and sanitary watchfulness.

Area of Parks and Public Squares in the City of New York.

Name of park or square.	Aeres.	Square rods.	Square feet.
Battery (not extended)	10	102	239
Bowling Green.....	----	89	253
City Hall park.....	10	134	----
Duane park	----	21	66
Five Points park.....	----	24	193
Hudson square and St. John's park.....	4	13	183
St. John's park, West Broadway	----	11	85
Washington square	9	119	246
Tompkins square.....	10	81	112
Abingdon square	----	33	39
Union square	3	74	253
Gramercy park.....	1	110	217
Madison square	6	139	47
Reservoir and park (Forty-second street) ..	10	----	----
Bloomingdale square.....	18	9	136
Hamilton square.....	15	----	----
Observatory place.....	25	122	160
Manhattan square.....	19	8	180
Mount Morris	20	27	114
Central park, including both reservoirs, is over $2\frac{1}{2}$ miles long and $\frac{1}{2}$ a mile wide....	1,000	----	----
Grand total.....	<u>1,167</u>	<u>5</u>	<u>72</u>

THE CLASSIFIED RECORDS OF DEATH.

Upon the following pages we present a classified abstract of the causes of death during the first nine months of the year. The express provisions of the health act (sect. 19) seemed to require that the annual report of this bureau, a department of the Board of Health should be completed to some date previous to December 1st. And in complying with this requirement in the first report, we beg leave to state, that in all subsequent years it will be desirable that the annual report of the bureau should embrace the records of the complete calender year, and that it be presented as early as practicable in January of the succeeding year.

The various summaries and abstracts of the current registrations and studies in the bureau are now prepared in accordance with a systematic plan that requires all branches of the work to be completely summed up at the expiration of weeks, months, quarters and the year. And the consolidated abstracts, like those now following, will hereafter be simply a summation of the four quarters, the twelve months, or the fifty-two weeks. The plan also provides that every second, every sixth, and every tenth year, there shall be a special review and analysis of the consolidated records of such periods.

It was manifestly a duty to consider well what methods and by what general plan the best practicable results could be evoked from such statistics and such experiences as this department will obtain and record.

At the end of the first three-quarters of the year, and the close of an epidemic season in which the chief thought and purpose has been to contribute directly by all the means of information at hand, to aid in the sanitary care and prevention which the public welfare demanded, we would not attempt an elaborate analysis of any of the statistics in the three branches of vital registration; but we shall have fully attained all that need be hoped for in this initial compend, if its forms of abstracts and its notes, on practical matters, do with fair distinctness set forth a basis for subsequent and more perfect annual reports. After much reflection, and with a governing design to have the bureau's records continually effectual in aiding the executive and administrative functions of the sanitary government, a system of methodizing and arrangement of the vital statistics has been adopted which will enable the reader to recognize the relations that such records bear to sanitary science and the progress of useful knowledge. The following is

a consolidated abstract of the causes of death in the nine months ending September 30th. The arrangement, the nomenclature and the summation by classes and orders, presents a fac-simile of our weekly summary for office use, while the percentage columns correspond with our monthly and quarterly abstracts.

Deaths in New York, from all causes, registered in the first nine months of the year 1866.

MALES.

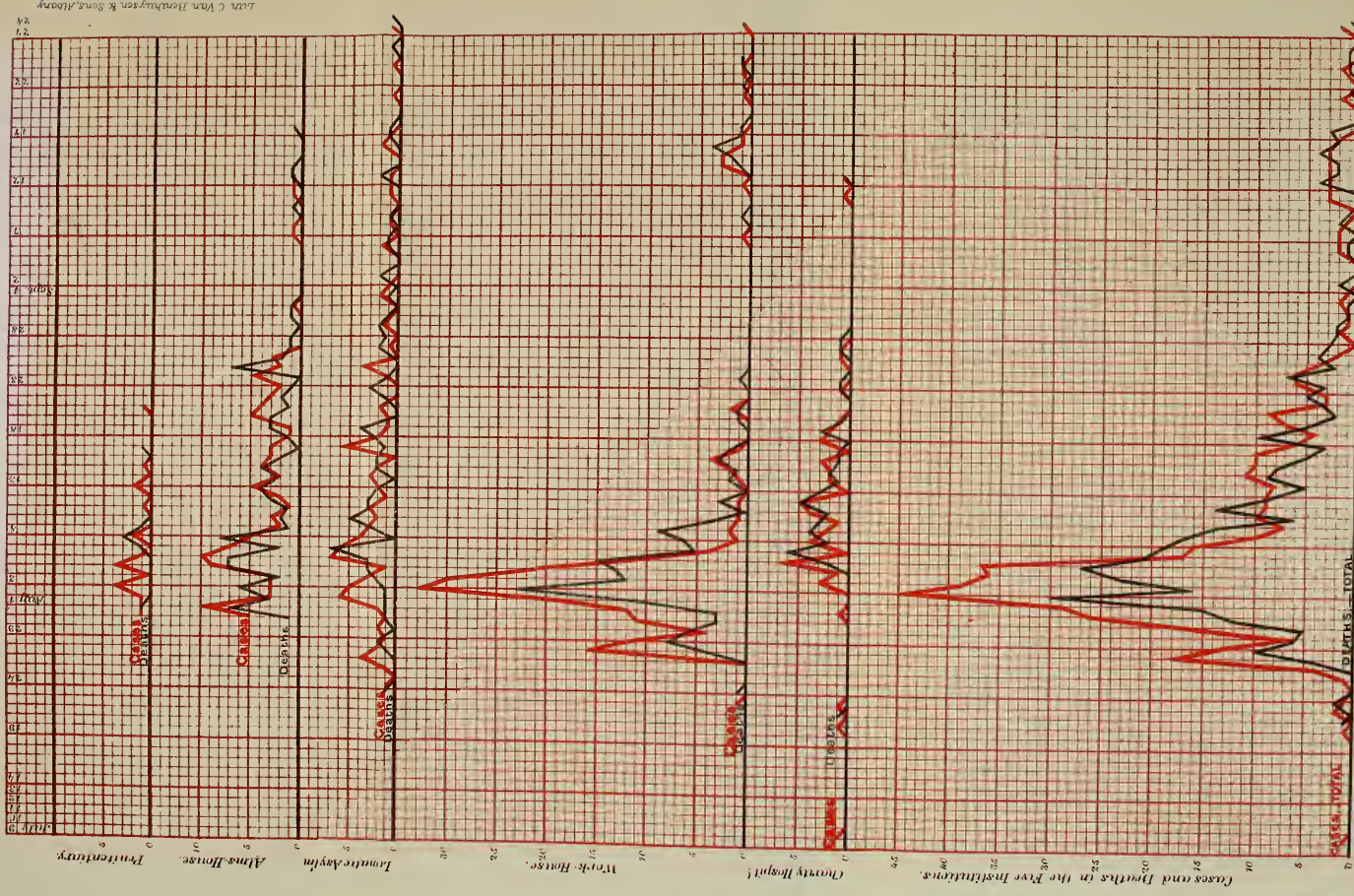
CAUSES OF DEATH.	Under 1 year of age.	1-	2-	3-	4-	Total under 5 yrs.	5-	10-	15-	20-	25-	30-	35-	40-
CLASS I.—Zymotic Diseases.														
Order 1. (Miasmatic Diseases.)														
Small-pox	3	2	1	---	---	6	---	1	---	3	5	1	2	1
Varioloid	1	1	---	---	---	2	---	---	1	---	---	---	---	---
Measles	14	43	14	3	5	79	8	1	---	---	---	---	---	---
Scarlatina	28	60	59	39	34	220	63	5	---	1	---	---	---	---
Diphtheria	31	47	36	25	14	153	11	4	2	2	---	---	1	---
Quinsy (tonsillitis)	---	2	---	---	---	2	1	---	---	---	---	---	1	---
Croup (pseudo membranous)	33	39	18	22	11	123	12	---	---	---	---	---	---	---
Whooping-cough	17	13	3	---	---	33	---	---	---	---	---	---	---	---
Typhus fever	---	2	4	4	5	15	13	9	13	22	25	22	25	25
Typhoid fever	2	2	6	3	5	18	17	13	22	26	22	19	20	17
Erysipelas	18	1	---	---	2	21	---	---	2	4	1	2	3	1
Carbuncle	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Dysentery	60	40	12	10	6	128	20	4	5	18	18	9	14	9
Diarrhœa	270	67	16	5	7	365	8	5	6	16	11	10	11	12
Cholera morbus	9	8	2	---	4	23	11	4	2	5	8	9	6	9
Cholera, Asiatic	8	4	8	5	4	29	22	24	13	33	53	44	43	48
Cholera infantum	590	214	31	7	5	847	2	---	---	---	---	---	---	---

[illegible]

Deaths in New York—MALES—Continued.

CAUSES OF DEATH.	Under 1 year of age.	1-	2-	3-	4-	Total under 5 yrs.	5-	10-	15-	20-	25-	30-	35-	40-
Order 4. (Parasitic Diseases.)							1							
Worms, and other parasitic diseases														
Total of zymotic class	1213	559	214	129	104	2219	194	78	71	151	170	136	147	139
Class II.—Constitutional Diseases.														
Order 1. (Diathetic Diseases.)														
Rheumatism			1			1		1	1	2	1	1	3	2
Dropsy	3	4		6	2	15	7	3	3	1	2		3	9
Cancer												1	2	1
Cancer, of breast											1			
Cancer, of liver														
Cancer, of nose														
Cancer of stomach											2		1	1
Cancer of other parts										1				
Noma (cancerum oris)											1			
Mortification			1			1					1		1	
Gangrene														
Inflammation of leg							1							
Total of diathetic diseases	3	4	2	6	2	18	8	4	4	4	8	3	10	15

DIAGRAM SHOWING THE COURSE OF THE CHOLERA IN THE INSTITUTIONS ON BLACKWELL'S ISLAND, —1866.



Order 2. (Tubercular Diseases.)

Scrofula	20	6	2	2	3	33	4	1	1	1	2	2	1	1	---
Tabes mesenterica	389	102	22	5	3	521	7	4	---	1	3	1	---	2	---
Phthisis pulmonalis	32	19	13	14	6	84	16	20	62	170	168	146	156	130	---
Hydrocephalus	167	99	40	13	6	325	14	22	---	---	---	---	---	---	---
Psoas abscess	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Lumbar abscess	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Total tubercular diseases	608	226	77	34	18	963	41	27	63	172	173	149	157	132	---
Total of constitutional diseases	616	230	79	41	20	981	49	31	67	176	181	152	167	145	---

Class III.—Local Diseases.

Order 1. (Nervous Diseases.)

Meningitis	79	58	23	14	13	187	19	2	7	7	2	7	9	7	---
Cerebritis	20	7	3	4	1	35	10	4	4	4	2	2	5	3	---
Softening of the brain	---	---	---	1	---	1	---	1	---	1	3	1	2	1	---
Apoplexy	9	1	1	2	---	13	1	---	---	4	7	9	10	8	---
Paralysis, (general)	1	1	2	2	---	6	---	---	---	2	3	7	11	3	---
Insanity	---	---	---	---	---	---	---	---	---	---	1	---	1	---	---
Epilepsy	---	---	---	1	---	1	1	---	1	---	1	3	4	3	---
Sunstroke	---	---	---	---	---	1	---	---	---	21	26	31	31	21	---
Sunstroke, "effects of heat"	---	1	---	---	---	---	---	---	---	3	3	13	7	7	---
Convulsions	501	98	31	13	12	655	21	1	1	---	2	---	---	---	---
Setanus	6	1	1	---	---	8	3	1	---	2	2	---	1	1	---
Congestion of the brain	43	25	8	4	2	82	13	2	3	7	12	8	10	6	---
Disease of the brain	7	---	1	1	1	10	---	---	1	---	---	1	2	2	---

Deaths in New York—MALES—Continued.

CAUSES OF DEATH.	Under 1 year of age.	1-	2-	3-	4-	Total under 5 yrs.	5-	10-	15-	20-	25-	30-	35-	40-
Order 4. (Digestive Diseases.)														
Hernia, strangulated	2					2							2	
Cirrhosis of the liver	1					1		1			2	3	2	5
Ileus (colic)	5					5				1			1	1
Intussusception	6	1				7						1		
Stricture of intestines	1					1								
Fistula														
Ulcer of the stomach	1					1								1
Hepatitis	3					3						1		1
Jaundice	7	1				8						1	2	7
Liver disease	1					1							1	
Dyspepsia														
Abscess of liver											2	1	1	1
Melana														
Cesophagitis														
Induration of liver														
Perforation of umbilicus														
Total digestive diseases	110	27	2	3	2	144	5	11	7	20	34	25	28	31
Order 5. (Urinary Diseases.)														
Nephritis	1				1	2	1			1		1		3
Nephria (Bright's disease)	1	2	5		1	9	7	3	8	12	16	9	17	19

[illegible]

[illegible]

Deaths in New York—MALES—Continued.

CAUSES OF DEATH.	Under 1 year of age.	1-	2-	3-	4-	Total under 5 yrs.	5-	10-	15-	20-	25-	30-	35-	40-
Order 3. (Murder and Manslaughter) -----										3	1			
Order 4. (Deaths by Suicide.)														
Wounds. { Gunshot-----									1	2		2	1	1
{ Cut, stab -----													5	2
Poison -----														4
Drowning -----										2				1
Hanging -----											1	1		2
By jumping from heights -----														
Total suicidal deaths -----									1	4	1	3	6	10
Order 5. (Execution.)														
Hanging -----										1				

Deaths in New York—MALES—Continued.

CAUSES OF DEATH.	45-	50-	55-	60-	65-	70-	75-	80-	85-	90-	95-	100-	100- up's.	Total.
CLASS I.—Zymotic Diseases.														
Order 1. (Miasmatic Diseases.)														
Small-pox	1	1	2											23
Varicoid														3
Measles														88
Scarlatina														289
Diphtheria		1												174
Quinsy (tonsilitis)								1						5
Croup (pseudo membranous)														135
Whooping-cough														33
Typhus fever	20	18	6	5	6	2	2							228
Typhoid fever	7	10	6	3	5	2		1						208
Erysipelas		1	1	1	2	1	2	2						44
Carbuncle		1		1	2									4
Dysentery	12	6	7	10	4	3	3	2						272
Diarrhoea	12	12	11	20	16	6	6	1			1			529
Cholera morbus	11	2	7	5	10			1						113
Cholera, Asiatic	46	51	33	25	17	1	3	1						486
Cholera infantum														849
Cerebro-spinal meningitis	1													8
Intermittent fever		1	1				1							12
Remittent fever	1	1		2				1						29

[illegible]

[illegible]

Order 2. (Circulatory Diseases.)

Pericarditis	3	4	3	3	3	35
Aneurism of the heart	3	1	1	1	1	13
Aneurism of the aorta	2	1	1	7	1	10
Disease of the heart	16	10	11	3	11	142
Hypertrophy of the heart	2	5	3	3	2	44
Valvular disease of the heart	2	1	1	2	7	31
Fatty degeneration of the heart	1	1	1	1	1	9
Atrophy of the heart	---	---	---	---	1	5
Phlebitis	---	---	---	1	1	3

Deaths in New York—MALES—Continued.

CAUSES OF DEATH.	45-	50-	55-	60-	65-	70-	75-	80-	85-	90-	95-	100-	100- up'ds.	Total.
Order 2. (Circulatory Diseases).														
Angina pectoris	1				1									1
Syncope														
Total circulatory diseases	30	23	16	20	23	12	5	5	1	1				293
Order 3. (Respiratory Diseases.)														
Laryngitis	1		2				1							19
Bronchitis	5	6	5	3	17	1	4	2						208
Pleurisy		2	1	3		2								23
Hydrothorax	1	1	1	1	3		1							16
Empyemia	1	1	1											8
Pneumonia	30	20	26	22	19	9	7	4						558
Asthma		4	1	3	1	1	2	1	1		1			31
Gangrene of lungs	1	2	1	2		2								11
Congestion of lungs	7	7	4	2	5	1	4	2	2					138
Hemorrhage of lungs	6	4	1	1	4	2								50
Hemorrhage of nose.						1								2
Hemorrhage														3
Total respiratory diseases	52	47	43	37	49	19	19	9	3		1			1067

[illegible]

Surgical operations (amputations) -----	1																		3
Total accidents and negligence -----	25	15	12	17	12	3	3	1											470
Order 3. (Murder and Manslaughter) -----	1																		5
Order 4. (Deaths by Suicide.)																			
Wounds. { Gunshot -----		1																	7
{ Cut, stab -----	2	1																	6
Poison -----		1																	10
Drowning -----																			3
Hanging -----		1	2																7
By jumping from heights -----					1														1
Total suicidal deaths -----	2	4	2		1														34
Order 5. (Execution.)																			
Hanging -----																			1

Deaths in New York—Continued.

FEMALES.

CAUSES OF DEATH.	Under 1 year of age.	1-	2-	3-	4-	Total under 5 yrs.	5-	10-	15-	20-	25-	30-	35-	40-
CLASS I.—Zymotic Diseases.														
Order 1. (Miasmatic Diseases.)														
Small-pox	---	3	1	---	---	4	1	---	1	1	2	2	---	---
Varioloid	---	---	---	1	---	1	---	---	---	---	---	---	---	---
Measles	13	20	9	5	4	51	4	---	---	---	1	---	---	---
Scarlatina	18	68	43	47	37	213	50	8	2	1	1	---	---	---
Diphtheria	28	40	31	15	15	129	14	2	3	---	1	2	---	2
Quinsy (tonsillitis)	2	1	1	---	---	4	---	---	---	---	---	---	---	---
Croup (pseudo membranous)	17	36	29	18	9	109	13	---	---	---	---	---	---	---
Whooping-cough	16	16	7	1	2	42	1	---	---	---	---	---	---	---
Typhus fever	1	2	2	6	2	13	15	4	21	17	13	15	14	9
Typhoid fever	1	1	3	3	8	16	17	13	13	20	16	13	6	11
Erysipelas	19	---	---	---	1	20	1	1	2	---	1	3	3	1
Puerperal fever	---	---	---	---	---	---	---	---	8	24	28	23	13	6
Carbuncle	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Dysentery	65	35	7	4	6	117	19	6	10	10	22	18	9	6
Diarrhœa	231	63	15	9	1	319	4	4	3	9	11	11	22	10
Cholera morbus	10	---	2	2	1	15	12	---	3	11	11	9	8	7
Cholera, Asiatic	2	5	5	6	6	24	30	14	29	81	85	84	64	57

Cholera infantum	499	211	25	4	---	739	5	---	---	---	---	---	---	---
Cerebro-spinal meningitis	1	1	---	---	---	2	---	1	---	---	---	---	---	1
Intermittent fever	1	1	1	1	---	4	1	---	1	---	---	---	---	---
Remittent fever	1	4	5	3	1	14	8	---	1	2	---	3	2	---
Irritative fever	1	1	1	2	---	5	1	1	1	2	1	1	2	---
Pæmia	3	---	---	---	---	3	3	---	---	2	3	2	---	---
Septicæmia	1	---	---	---	---	1	---	---	---	---	1	1	1	---
Total miasmatic diseases	930	508	187	127	93	1845	199	45	98	180	197	187	144	110
Order 2. (Enthetic and Inoculated Diseases.)														
Syphilis	10	2	1	---	---	13	---	---	4	3	---	1	1	1
Syphilitic disease of the bones	---	---	---	---	---	---	---	---	1	---	---	---	---	---
Malignant pustule	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Hydrophobia	---	---	---	---	1	1	---	---	---	---	---	---	---	---
Total enthetic and inoculated diseases.	10	2	1	---	1	14	---	---	5	3	---	1	1	1
Order 3. (Dietic Diseases.)														
Starvation (privation, &c.)	109	5	---	1	---	115	---	---	---	---	---	2	---	2
Want of breast milk	2	---	---	---	---	2	---	---	---	---	---	---	1	1
Purpura	1	1	---	---	---	2	---	---	---	---	---	---	1	---
Scurvy	1	---	---	---	---	1	---	---	1	1	1	---	2	2
Alcoholism { (a) Intemperance (b) Delirium tremens	---	---	---	---	---	---	---	---	---	---	1	3	2	---
Total dietic diseases	113	6	---	1	---	120	---	---	1	2	3	9	4	5

Deaths in New York—FEMALES—Continued.

CAUSES OF DEATH.	Under 1 year of age.	1-	2-	3-	4-	Total under 5 yrs.	5-	10-	15-	20-	25-	30-	35-	40-
Order 4. (Parasitic Diseases.)														
Worms, and other parasitic diseases			1			1								
Total of zymotic class	1053	516	189	128	94	1980	199	54	104	185	200	197	149	116
CLASS II.—Constitutional Diseases.														
Order 1. (Diathetic Diseases.)														
Rheumatism									1				1	
Dropsy	7	4	3		1	15	7	3	4	4	6	6	12	5
Cancer	2			2		4	1	1	1		2	1	4	5
Cancer, of breast												1	3	2
Cancer, of liver												1	2	
Cancer, of nose														
Cancer, of ovaries														
Cancer, of stomach														
Cancer, of uterus														
Cancer of other parts														
Noma (cancrum oris)			1	1		2								1
Mortification					1	1				1				
Gangrene				1		1						1		1
Inflammation of leg														
Total of diathetic diseases	9	4	4	4	3	24	8	4	6	5	12	15	29	17

Order 2. (Tubercular Diseases.)

Scrofula	13	4	1	1	1	20	1	1	1	1	1	2	1
Tubercles mesenterica	319	69	22	6	1	417	2	1	1	1	1	2	1
Phthisis pulmonalis	25	25	10	7	4	71	97	178	158	164	143	95	
Hydrocephalus	111	79	27	8	7	232	2	2	1	1	1	1	
Psoas abscess	---	---	---	---	---	---	---	---	---	---	---	---	---
Lumbar abscess	---	---	---	---	---	---	1	1	---	---	---	---	---
Total tubercular diseases	468	177	60	22	13	740	101	180	161	165	147	97	
Total of constitutional diseases	477	181	64	26	16	764	107	185	173	180	176	113	

Class III.—Local Diseases.

Order 1. (Nervous Diseases.)

Meningitis	65	45	24	13	11	158	10	3	7	4	6	2	
Cerebritis	17	8	5	1	2	33	3	---	2	5	---	1	
Softening of the brain	---	---	---	---	---	---	---	---	---	---	---	---	
Apoplexy	6	3	---	1	1	11	1	1	1	8	5	1	8
Paralysis, (general)	3	---	1	1	1	6	2	1	2	1	3	---	
Insanity	---	---	---	---	---	---	---	---	---	---	---	---	
Epilepsy	---	---	---	---	---	---	5	9	2	6	7	2	
Sunstroke	---	---	---	1	---	1	---	5	1	23	8	2	
Sunstroke, "effects of heat"	1	---	---	---	---	1	---	4	5	6	4	1	
Convulsions	421	99	28	16	5	569	1	---	5	4	1	1	
Tetanus	1	---	---	---	---	---	---	---	1	---	---	---	
Congestion of the brain	40	12	9	2	3	66	6	7	6	8	5	2	
Disease of the brain	5	2	3	---	1	11	---	---	---	1	1	---	

Deaths in New York—FEMALES—Continued.

CAUSES OF DEATH.	Under 1 year of age.	1-	2-	3-	4-	Total under 5 yrs.	5-	10-	15-	20-	25-	30-	35-	40-
Order 1. (Nervous Diseases.)														
Spinal disease.....	---	---	---	---	1	1	---	---	1	---	---	1	---	2
Paraplegia.....	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Hemiplegia.....	---	---	---	---	---	---	---	---	---	---	---	---	1	---
Neuralgia.....	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Abscess of brain.....	---	---	---	---	---	---	---	---	1	1	---	---	---	---
Chorea.....	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Hysteria.....	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Fright.....	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Total of nervous diseases.....	559	169	70	35	25	858	57	26	23	35	32	69	44	23
Order 2. (Circulatory Diseases.)														
Pericarditis.....	2	---	---	---	---	2	3	4	3	8	3	2	2	1
Aneurism of the heart.....	---	---	---	---	---	---	---	---	1	---	---	---	---	---
Aneurism of the Aorta.....	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Disease of the heart.....	5	---	---	1	---	6	6	6	8	11	7	7	10	4
Hypertrophy of the heart.....	1	---	1	---	---	2	4	4	1	3	4	1	3	1
Valvular disease of the heart.....	2	---	1	---	---	3	2	---	1	1	1	3	2	1
Fatty degeneration of the heart.....	---	---	1	---	---	1	---	---	---	---	---	2	---	---
Atrophy of the heart.....	2	---	---	---	---	2	---	---	---	---	---	1	---	---
Phlebitis.....	2	---	---	---	---	2	---	---	---	1	---	---	1	---

[illegible]

Deaths in New York—FEMALES—Continued.

CAUSES OF DEATH.	Under 1 year of age.	1-	2-	3-	4-	Total under 5 yrs.	5-	10-	15-	20-	25-	30-	35-	40-
Order 4. (Digestive Diseases.)														
Hernia, strangulated	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Cirrhosis of the liver	---	---	---	---	---	---	---	---	---	2	---	3	2	2
Ileus (colic)	2	1	---	---	---	3	---	---	---	1	---	---	1	---
Intussusception	4	1	---	---	---	5	---	---	---	1	---	---	---	---
Stricture of intestines	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Fistula	---	---	---	---	---	---	---	---	---	---	---	1	---	---
Ulcer of the stomach	2	---	---	---	---	2	---	2	2	---	2	2	2	2
Hepatitis	---	---	---	---	---	---	2	---	---	---	---	5	4	---
Jaundice	4	1	---	---	---	5	---	---	---	---	---	---	1	---
Liver disease	1	---	---	---	---	1	---	---	---	1	3	1	5	1
Dyspepsia	1	---	---	---	---	1	---	---	---	---	---	---	---	---
Abscess of liver	---	---	---	---	---	---	---	---	---	---	---	1	---	---
Melena	1	---	---	---	---	1	---	---	---	---	---	---	---	---
Gesophagitis	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Induration of liver	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Perforation of umbilicus	1	---	---	---	---	1	---	---	---	---	---	---	---	---
Total digestive diseases	88	22	3	3	1	117	12	5	14	28	42	47	35	20
Order 5. (Urinary Diseases.)														
Nephritis	1	---	1	---	2	4	---	---	---	---	1	1	2	---
Nephria (Bright's disease)	2	2	1	2	---	7	5	2	9	13	14	7	6	7

[illegible]

[illegible]

Deaths in New York—FEMALES—Continued.

CAUSES OF DEATH.	Under 1 year of age.	1-	2-	3-	4-	Total under 5 yrs.	5-	10-	15-	20-	25-	30-	35-	40-
CLASS V.—Deaths by Violence.														
Order 1. (Fractures, Accidents, Negligence.)														
Fractures and contusions	1					1	4				1	1	2	
Wounds (not specified)												1		
Wounds. { (a) Gunshot												1		
(b) Penetrating														
Burns and scalds	5	2	3	1		11	6	4	3	2	1		3	2
Poison	1		1			2	1							
Drowning	5		1			6	2	1	1		2	5	1	2
Suffocation	7		1			8	1							1
Asphyxia	23	1				24								2
Falls	3	1	1		1	6	2	3	1		1	3	1	1
Railroad casualties		1	4	1	1	7					1			
Casualties by other vehicles														
Surgical operations (amputations)													1	1
Total accidents and negligence	45	5	11	2	2	65	16	8	5	2	6	11	8	9
Order 3. (Murder and Manslaughter)										1				1

Order 1. (Miasmatic Diseases.)

Remittent fever	2	1	1	1	1	1	1	1	1	1	37	66	.31
Irritative fever	---	---	---	1	1	1	1	---	---	---	18	46	.22
Pyæmia	---	1	---	---	2	1	1	---	---	---	17	47	.22
Septicæmia	---	---	---	---	1	---	---	---	---	---	5	7	.03
Total miasmatic diseases	74	88	75	64	51	35	24	15	4	1	3447	7039	33.19

Order 2. (Enthetic and Inoculated Diseases.)

Syphilis	1	---	---	---	---	---	---	---	---	---	24	42	.19
Syphilitic disease of the bones	---	---	---	---	---	---	---	---	---	---	---	2	.01
Malignant pustule	---	---	---	---	---	---	---	---	---	---	1	1	---
Hydrophobia	---	---	---	---	---	---	---	---	---	---	1	2	.10
Total enthetic and inoculated diseases	1	---	---	---	---	---	---	---	---	---	26	47	.22

Order 3. (Dietic diseases.)

Starvation (privation, &c.)	1	---	1	---	---	---	---	---	---	---	121	250	1.18
Want of breast milk	---	---	---	---	---	---	---	---	---	---	2	2	.01
Purpura	---	---	---	---	---	---	---	---	---	---	5	9	.04
Scurvy	---	---	---	---	1	---	---	1	---	---	7	9	.04
Alcoholism { (a) Intemperance	1	---	3	1	1	---	---	---	---	---	15	42	.19
{ (b) Delirium tremens	---	1	---	2	---	---	---	---	---	---	7	50	.23
Total dietic diseases	2	1	4	3	2	---	---	1	---	---	157	362	1.70

[illegible]

CLASS III.—Local Diseases.

Order 1. (Nervous Diseases.)

[illegible]

Aneurism of the aorta	1	11	3	9	5	8	4	6	1	1	2	12	.06
Disease of the heart	3	11	1	1	2	5	2	3	1	1	113	255	1.20
Hypertrophy of the heart	1	2	1	1	2	5	2	3	1	1	39	83	.39
Valvular disease of the heart	2	2	1	1	3	2	3	3	1	1	29	60	.28
Fatty degeneration of the heart	1	1	1	1	1	1	1	1	1	1	7	16	.08
Atrophy of the heart	1	1	1	1	1	1	1	1	1	1	2	7	.03
Phlebitis	1	1	1	1	1	1	1	1	1	1	5	8	.04
Angina pectoris	1	1	1	1	1	1	1	1	1	1	3	4	.02
Syncope	1	1	1	1	1	1	1	1	1	1	1	1	---
Total circulatory diseases	6	19	14	12	20	12	12	12	3	1	235	528	2.50
Order 3. (Respiratory Diseases.)													
Laryngitis	1	1	1	1	1	1	1	1	1	1	8	27	.13
Bronchitis	1	5	4	4	5	6	5	5	2	2	161	369	1.74
Pleurisy	2	1	1	1	1	1	1	1	1	1	24	47	.22
Hydrothorax	1	1	2	1	3	1	1	1	1	1	18	34	.16
Empyemia	17	17	12	11	9	12	6	7	3	1	4	12	.06
Pneumonia	2	2	1	2	2	1	1	1	1	1	457	1015	4.79
Asthma	2	2	1	2	2	1	1	1	1	1	29	60	.28
Gangrene of lungs	2	6	5	3	1	3	2	1	1	1	2	13	.06
Congestion of lungs	1	1	1	2	1	1	1	1	1	1	118	256	1.21
Hemorrhage of lungs	1	1	1	2	1	1	1	1	1	1	31	81	.38
Hemorrhage of nose	1	1	1	1	1	1	1	1	1	1	1	3	.01
Hemorrhage	1	1	1	1	1	1	1	1	1	1	1	4	.02
Total respiratory diseases	27	33	23	24	20	23	14	8	6	1	854	1921	9.06

Perforation of umbilicus	19	20	18	12	17	8	6	1	2	1	2	-----
Total digestive diseases	424	843	3.97									
Order 5. (Urinary Diseases.)												
Nephritis	9	11	9	3	4	7	4			8	22	.11
Nephria (Bright's disease)			1				1			117	301	1.41
Diabetis					1					4	11	.05
Cystitis	2						1	1		1	21	.10
Kidneys disease										11	20	.10
Uræmia		1	1							9	23	.11
Suppression of urine											1	.01
Pelvic abscess											1	.01
Disease of prostate											3	.01
Total of urinary diseases	11	12	11	3	5	7	6	1		150	403	1.90
Order 6. (Generative Diseases.)												
Ovarian dropsy			1					1		9	9	.04
Metritis		1								27	27	.13
Uterine tumor			1	1						3	3	.01
Uterus disease										3	3	.02
Polypus of uterus										1	1	.00
Total of generative diseases		1	2	1				1		43	43	.20

Cyanosis	---	---	---	---	---	---	---	---	---	14	43	.19				
Spina bifida	---	---	---	---	---	---	---	---	---	5	11	.05				
Other malformations	---	---	---	---	---	---	---	---	---	25	53	.25				
Teething	---	---	---	---	---	---	---	---	---	41	94	.44				
Imperforate anus	---	---	---	---	---	---	---	---	---	1	5	.02				
Cleft palate	---	---	---	---	---	---	---	---	---	---	2	.01				
Trismus nascentum	---	---	---	---	---	---	---	---	---	8	16	.08				
Atelectasis	---	---	---	---	---	---	---	---	---	10	25	.12				
Total developmental diseases of children	---	---	---	---	---	---	---	---	---	234	548	2.58				
Order 2. (Developmental diseases of women.)	---	---	---	---	---	---	---	---	---	---	---	---				
Chlorosis	---	---	---	---	---	---	---	---	---	1	1	---				
Childbirth	---	---	---	---	---	---	---	---	---	10	10	.05				
Convulsions puerperal	---	---	---	---	---	---	---	---	---	19	19	.09				
Flooding	1	---	---	---	---	---	---	---	---	27	27	.13				
Miscarriage	---	---	---	---	---	---	---	---	---	3	3	.01				
Puerperal mania	---	---	---	---	---	---	---	---	---	5	5	.02				
Tubal pregnancy	---	---	---	---	---	---	---	---	---	1	1	.01				
Total developmental diseases of women	1	---	---	---	---	---	---	---	---	66	66	.31				
Order 3. (Diseases of age.)	---	---	---	---	---	---	---	---	---	---	---	---				
Old age	---	1	2	4	15	32	46	49	25	16	8	2	3	203	329	1.55
Senile gangrene	---	---	---	---	---	---	---	---	---	---	---	---	---	---	2	.01
Total diseases of age	---	1	2	4	15	32	46	49	25	16	8	2	3	203	331	1.56

[illegible]

Deaths in New York, from all causes, registered in the first nine months of the year 1866, with the summary and percentage of total mortality in the several periods of life, and by classes of causes.

MALES.

CAUSES OF DEATH.	Under 1 year of age.	1-	2-	3-	4-	Total under 5 years.	5-	10-	15-	20-	25-	30-	35-	40-	45-	50-	55-	60-	65-	70-	75-	80-	85-	90-	95-	100-	100-upwards.	Total.
Class V: Sudden deaths(causes uncertained).....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	4	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6
Causes not specified, or ill-defined.....	1	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2
Total from violent deaths	30	11	10	8	2	61	41	20	20	40	55	64	62	57	27	20	14	17	12	4	3	.....	1	.....	.....	.....	.....	518
Total mortality from all causes.....	3,431	1,181	436	254	181	5,483	411	184	223	502	578	566	584	541	486	409	336	309	303	167	111	79	33	8	4	.....	1	11,318

Deaths in New York, from all causes, registered in the first nine months of the year 1866, &c.—Continued.

FEMALES.

CAUSES OF DEATH.	Under 1 year of age.	1-	2-	3-	4-	Total under 5 years.	5-10-	10-15-	15-20-	20-25-	25-30-	30-35-	35-40-	40-45-	45-50-	50-55-	55-60-	60-65-	65-70-	70-75-	75-80-	80-85-	85-90-	90-95-	95-100-	100-upwards.	Total.	Total both sexes.	Percentage of each cause in total.	
Class V: Sudden deaths(causes unascertained.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	8	.04
Causes not specified, or ill-defined.....	2	.....	.....	.....	.....	2	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	5	.02
Total from violent deaths.....	47	5	11	2	2	67	17	8	6	4	8	13	8	11	6	8	4	4	2	3	2	1	.....	.....	.....	.....	172	690	3.25
Total mortality from all causes.....	2,827	1,035	404	216	158	4,640	390	149	315	532	539	611	491	351	288	300	255	257	234	189	152	108	51	20	10	3	3	9,888	21,206	100.00

RECAPITULATION.—Totals of both sexes, by classes—Percentages.

Class:	Under 1 year of age.	1-	2-	3-	4-	Total under 5 years.	5-	10-	15-	20-	25-	30-	35-
I.—Zymotic.....	2,266	1,075	403	257	198	4,199	393	132	175	336	370	333	296
II.—Constitutional.....	1,088	411	143	67	36	1,745	100	61	174	361	354	332	343
III.—Local.....	2,057	655	262	131	98	3,203	244	106	146	270	314	403	346
IV.—Developmental.....	770	59	11	5	3	848	6	6	17	23	16	32	20
V.—Violence.....	77	16	21	10	4	128	58	28	26	44	63	77	70
Total.....	6,258	2,216	840	470	339	10,123	801	333	538	1,034	1,117	1,177	1,075
Percentage of deaths at each period of life upon total mortality from all causes.....	29.51	10.45	3.96	2.21	1.59	47.73	3.78	1.48	2.53	4.88	5.27	5.55	5.07

RECAPITULATION.—Totals of both sexes, by classes—Percentages—Continued.

Class:	40-	45-	50-	55-	60-	65-	70-	75-	80-	85-	90-	95-	100-	100-upwards.	Total.	Percentage of each cause in total.
I.—Zymotic.....	255	208	200	162	143	121	50	43	26	4	1	2	1	.....	7,450	35.13
II.—Constitutional.....	258	223	177	161	138	114	66	37	15	6	1	1	.....	.....	4,667	22.00
III.—Local.....	296	291	288	239	222	241	151	91	47	21	4	1	.....	.....	6,924	32.65
IV.—Developmental.....	15	19	16	11	42	47	82	87	98	52	22	10	2	4	1,475	6.95
V.—Violence.....	68	33	28	18	21	14	7	5	1	1	.....	.....	.....	.....	690	3.25
Total.....	892	774	709	591	566	537	356	263	187	84	28	14	3	4	21,206	100.00
Percentage of deaths at each period of life upon total mortality from all causes.....	4.26	3.65	3.34	2.79	2.67	2.53	1.68	1.24	.88	.39	.14	.07	.....	.02	100.00	.....

GEOGRAPHICAL AND LOCAL DISTRIBUTION OF THE MORTALITY.

There are some wards so low in the sanitary and social scale, as for example, the first, fourth, and sixth wards, in New York, that they present the natural antithesis of the best districts. But there is no ward so free from crowded tenant-houses, and other sanitary defects, as to be properly regarded as wholly the reverse of the foul wards here named. But the fact most important to be stated is this: that nearly the whole excess of mortality the past summer, above the ordinary rate, was limited, so far as related to the city itself, to the streets and premises where well known localizing conditions of epidemic disease were present. It is true that both cholera and the ordinary diarrhœal maladies, to some extent, overleap the immediate limits of the local faults here mentioned; but then, it is equally true, and, to the sanitary officers and the people, it is very instructive, that cholera, and all choleraic diarrhœa, gained a foothold only in the midst of localizing conditions, such as foul privies, obstructed or faulty local drainage, domestic filth, and overcrowding. The problem of setting limits to the diffusion and activity of cholera, and step by step, and house by house, and day by day, contesting the march of this insidious epidemic, was worthy of the highest promises of hygiene.

Reviewing critically the entire history of the epidemic, personally cognizant of every fact that was brought to the knowledge of the Board of Health and its officers, touching this visitation of cholera, and touching the various causes affecting the public health, and after years of practical responsibilities in the care of infectious and epidemic forms of disease, the registrar of this bureau fully accords in the general opinion of the people, as expressed in the public journals, that the active and exact methods of sanitary care adopted in the Metropolitan district repressed and controlled the cholera epidemic.

In New York, more than in any other city of equal population, mainly in consequence of over-crowding filthy tenements, the unprecedented immigration of homeless foreigners, and the accumulation of all localizing conditions of an epidemic, in the presence of such combined evils, cholera found a hot-bed fully prepared for its exotic germs. Quickly succeeding events in the development and diffusion of the pestilence, bear testimony to the existence and certainty of the peril in which the metropolis and its thousand channels of daily communication were placed. But, with scarcely an exception, all the thoroughfares of trade remained

unmarked by the footsteps of this foe; the highways of commerce remained open; business and all branches of industry continued unaffected by any fear, and the entire population of the metropolis and the State seemed to confess a firm faith in the practical operation of sanitary laws. Had it been practicable to apply these laws in a complete manner in every filthy and crowded quarter of the two cities, and to the ships and infected emigrants at Quarantine in our harbor, no officer of the Health Board now doubts that cholera would have found few footholds, though the season favored an epidemic.

We have seen, by the statistical abstracts on preceding pages, that the total mortality in the different wards, the past eight months, has varied as to—

1. The monthly death-rate on population.
2. The degree and duration of excessive mortality.
3. The relative quantity or force of the zymotic causes of death.
4. And as to the relative number of both diarrhœal and cholera deaths.

Some of these variations have a very wide range. For example, the death-rate in the Sixth ward, as compared with that in the Ninth. The death-rate of the Sixth ward, in the second quarter of the year, was equal to 39.69 per one thousand, annually, and in the third quarter it was 76.8 per one thousand, without including the large numbers of sick persons that were sent to hospitals in distant wards, to die. In the Ninth ward, the death-rate in the second quarter was 25.45 per one thousand; third quarter, 38.40 per one thousand. Each of these wards contains a little more than eighteen thousand poor people, in tenant houses, and in the Ninth there are twenty thousand more, who live in the plain style of the middle classes, artisans and well-to-do inhabitants. The Sixth ward is a third more densely populated, and is vastly lower in the average of its social scale. Its degree of filthiness and sanitary want is, like its death-rate, excessive.

The persistency and fatality of the epidemic prevalence of cholera and diarrhœal diseases the past season, in the different wards, will be best comprehended by referring to the zymotic and ward abstracts, on pages 68 *et seq.* The fact appears, also, that the diarrhœal maladies take the lead in all excesses above the lowest general average percentage of zymotic causes of death. But if we compare the Fourth, the Sixth, the Eighth, or the Fourteenth ward, with the more cleanly, intelligent, well-fed, and well-housed

population of the Fifteenth ward, then we may clearly read the lessons which such extreme differences teach. At the one extreme of social, domestic, and sanitary want—in the Sixth ward—death takes, during the six summer months—in half a year—one inhabitant out of every thirty-nine and three quarters, a yearly rate of 50.22 per one thousand; while in the Fifteenth ward, only one inhabitant out of every one hundred and thirteen was taken during those months—a yearly rate, during the epidemic, of only 17.52 per thousand.

NOTES ON THE CHIEF CAUSES OF MORTALITY.

Sanitary inquiry long ago furnished abundant evidence of the fact that the most active causes of death in populous districts are avoidable. Common observation has everywhere verified this conclusion, and has also confirmed the medical fact that these avoidable and preventable causes not only destroy outright great numbers of people, but that they not unfrequently augment the force and fatality of the unavoidable diseases. In the vital statistics of New York and Brooklyn, we have presented a distinct record of the zymotic diseases, for the purpose of showing precisely in what localities, at what periods of the year, and with what force this most preventable group of causes has found foothold for fatal work. The tabulated abstracts of the zymotic causes of death, as presented upon preceding pages, show how fitfully this class of causes fluctuates at different periods of the year, and how certainly its deathly forces are directed upon particular places. The incubation, or leavening, that characterizes the operations of these infections, whether from local miasms—as in typhoid fever, and dysentery—or from personal contagions—as in small-pox, and typhus—has very justly given the name “zymotic,” or ferment-poisons to this class of maladies.

In whatever town or city this class of diseases has been rife and persistent, there has ensued such immediate and positive decrease of them, whenever thorough and comprehensive improvements have been made in the local sanitary conditions, that medical observers find warrant to conclude that these foul disorders may be wholly restrained, if not utterly exterminated.

Nearly one-third of all the deaths in New York and Brooklyn these many years, have been caused by zymotic diseases. We have seen that in the second quarter of the year now closing, this class of causes produced 22.45 per centum of all the deaths in

New York; and in the third quarter it mounted up to the enormous ratio 49.55 out of every 1,000 deaths in the persons who were sent to their graves. In England, last year, this preventable class of diseases, alone, gave 119,731 deaths—one-fourth part of all the mortality in that country. This is somewhat less than the average ratio of the same cause in our best American States, of which the Empire State is believed to be the healthiest. But the total neglect of registration has prevented any study of the relative percentages in the different causes of mortality. And as none of our American cities have yet furnished us with a yearly classified analysis of causes of mortality, we will, in this place, refer to the annual records of death in the State of Massachusetts and in the city of London, classified according to the methods we have adopted, and presenting the most favorable examples of vital statistics, in regard to low ratios of the zymotic and other preventable causes of death.

In London, in a population of 3,000,000, the average ratio of deaths by zymotic causes is about 29 per centum on the total 70,000 deaths and upwards. In 1863, for example, there were 71,060 deaths in London.

20,670	of which were from Zymotic causes,	
13,492	do	do Constitutional causes,
26,336	do	do Local do
7,744	do	do Developmental do
2,509	do	do Violent do

The death-rate in London averages less than any other city, of a million and upwards, in the world. Its ratio of zymotic deaths is also proportionally lower, though nearly a sixth higher than in the average of all England. In Liverpool, zymotic causes kill from thirty-two to forty per cent. of all who die.

The admirably kept records of mortality in the State of Massachusetts exhibit the following results in the classified analysis of causes of death:

Total number of deaths in 5 years—1860 to 1864, 131,413.

	Per cent of total.
Total number of deaths from zymotic causes . . .	38,374, or 29.98
Total number of deaths from constitutional causes	32,553, or 25.44
Total number of deaths from local causes	30,228, or 23.62
Total number of deaths from developmental causes	20,866, or 16.30
Total number of deaths from violent causes	5,962, or 4.66

Without further comment upon this class of statistical evidence of the numerical magnitude of the preventable mortality, let us turn to the means of prevention of the avoidable causes of death.

First.—The discovery of the chief sources of any cause of premature death, and of any source of disease or physical degeneracy, is the first step towards the practical application of preventive measures. The puny infants that die from marasmus, the rickety and scrofulous children of low life and dismal dwellings, the nervous and intestinal disorders—convulsions and cholera infantum—that sweep so many thousands of children into untimely graves; the pleurisies, pneumonia, dropsies, and kidney diseases, that kill prematurely by hundreds annually, and pulmonary consumption that has for two generations claimed twelve, fifteen or twenty per cent. of all that die in our northern States—all these are in no small degree *preventable*, and hygiene has already proved its saving power over them by discovering and removing, or repressing and averting, the causes from which they severally originate, or by which they are aggravated. Thus, it has occurred in the medical and hygienic treatment of very many of the acute *local* diseases, such as pneumonia, pleuritis, and the diathetic maladies, as rheumatism and anæmia, together with all surgical diseases, that the chief glory of medical science in our day is justly accredited to the fact that its great advances have enabled the physician to save a much greater number of his patients than medical skill had saved in former days. And this is no delusion of professional conceit, for even in the records of hospitals and private practice in this metropolis, are found good proofs that a much larger proportion of the acutely sick of local disease and of some of the dyscrasia and fevers, are saved by the medical skill of the present day than were saved by our forefathers.

Massachusetts is a chosen home of pulmonary consumption, yet by the hygienic agencies that such intelligent sanitarians as her Shattuck, Wyman, Clark and Bowditch have popularly elucidated and encouraged, the death-rate from consumption has apparently been brought to a stand-point, from which it is decreasing; thus there were two hundred and ninety-four less lives destroyed by that insidious foe in 1864 than 1863 in that State.

The diseases of intemperance, and they are both numerous and fatal, have at last come to be studied with reference to their prevention. It still remains for the medical profession and for society to check the evil we now mention. We place alcoholism in our

list of the causes of death, and shall preserve such records as may be furnished by medical attendants and friends of the killed by this enemy. The subjoined analysis of the evidence concerning the positive influence of intemperance upon probabilities of life at any age has been prepared by the distinguished statist, Dr. Edward Jarvis, from Mr. Neison's elaborate researches for the General Life Insurance Company of London.

Age of persons.	Deaths in 100,000.		Comparative rate of mortality.	
	Intemperate.	Others.	Intemperate.	Others.
15 to 20 -----	1,342	730	18	10
20 to 30 -----	4,953	974	51	10
30 to 40 -----	4,620	1,110	42	10
40 to 50 -----	5,992	1,452	41	10
50 to 60 -----	6,418	2,254	29	10
60 to 90 -----	45,174	33,260	13	10
Comparative rate of deaths in equal numbers of				
intemperate and temperate persons of all ages,				
the same year.			32	10
			==	==

Painful and lingering maladies and sudden casualties kill the intemperate in this metropolis in enormous numbers. Life insurance offices estimate this hazard and havoc of an evil habit in the startling fractions and ratios we have given above. The workhouse the alms-hospital and the city sextons daily bring to this bureau certificates of death by the *diseases of intemperance*; and the question, "What aid to the prevention of intemperance can hygiene and a good government offer?" is daily asked by the physician and philanthropist. This we know from observation, and from the testimony of dispensary physicians and other visitors among the poor, that the crowded, dark and unventilated homes of the classes from which pauperism comes, are driven to habits of tipping by combined influences of the vital depression and demoralizing surroundings of their unhealthy habitations. Pertinent was the reply of a drunken mother, in a dismal rear court, to a sanitary officer who kindly asked why she drank: "If you lived in this place you would ask for whiskey instead of milk." No sanitary reforms of domestic wants, no work of ventilation and cleansing in the tenement houses, no moral and dissuasive powers of the

excise commission,* no well-administered asylum for the inebriate, and, most of all, no word of professional and friendly counsel by the physician to the tempted and the falling, can fail to diminish in some degree the waste of life by this besetting temptation.

Other unavoidable causes of mortality are continually swelling the death list. And of them, there is one that is so associated with the prostitution of woman in our cities, that to mention it is to arouse the moot disputations of theorists in morals, while to avoid and neglect it, is to leave the blighting curse of secret contagion to corrupt the blood and rot the bones of ten thousand ignorant and thoughtless victims of the syphilitic poison. Most of the deaths registered from syphilis are found to be children or wives of poor laborers or reckless men, and thus proof is furnished that many innocent persons are its uncured and uncared for victims. But this is but a drop of the sorrow and the physical evil of that unrestrained contagion.

We turn from this special inquiry concerning prevention in particular classes of the causes of death, and invoke the ever progressive teachings of hygiene; for it is plain that the social and physical aids to health are also so mutually progressive and reactive that the more precise and practical we make our knowledge of the sources and results of disease, the more certainly will the great objects of sanitary government be attained. It is also plain that the richer fruits of hygiene, which may not be fully attainable now, are certainly attainable in the future. And, in the great problem of saving and improving life, if sanitary science and the laws of nature are not delusions, there will yet be given to the populations of our great cities such aid in escaping the preventable causes of disease and early death, that life and all the benefits that human lives can enjoy or impart, will, by such sanitary and social care be nearly doubled. The sum of such an increase in vital security in the city of New York would be represented (in 1865 or 1866) by twelve thousand lives saved, and with that saving, there would be added the blessing of relief from the sickness,

* The State of New York is the first to make the important experiment of requiring that the Board of Health shall assume the responsibility of an excise board. The sanitary results of a wise exercise of this duty in the Metropolitan district are looked for with profound interest.

In this State, also, has been founded the first inebriate asylum in the world, and even before its beneficent design has been put into full operation it has become the spur to inquiry and effort in many States in Europe as well as in America, for mitigating the results of intemperance. Dipsomania and alcoholism are real diseases, and they must be treated by hygienic means.

pains, and pauperism that result from these preventable causes. And, let it be borne in mind the mere saving of life is not the chief, not the greatest, of the benefits conferred by physical means of which such life-saving is the true index; for it is in the augmented health and vitality of the living, and the active members of society, directly resulting from sanitary care, that individuals, families, and the municipality practically realize the truth of Franklin's epigram—"Health is wealth."

Every reflecting citizen, who grasps this classification and treatment of the preventable and avoidable, as distinguished from the inevitable and natural causes of mortality, will readily find the reason for that abiding conviction and enthusiasm that inspires the physician and hygeist of the present day. Principles are greater than any array of statistics; but to serve as the basis of estimation for duty and results that grow out of the principle in social welfare that holds human life sacred, and would add to its happiness and usefulness, these dry statistics and classifications have uses which the sanitary government and the State require.

THE ZYMOTIC CAUSES OF DEATH.

Small-pox.—This contagion killed only thirty-five persons in New York, and one in Brooklyn during the second and third quarters of the year. The total quantity of it in these two cities in that period, is believed to have been less than for any similar period for many years. We always may safely estimate that there are from twelve to fifteen persons ill with this malady to every one that dies.

The epidemic prevalence of this malady during the winter of 1864-65 swept through the city in such a manner as to induce a healthful mental determination of nearly the entire population to be vaccinated. In the several chartered medical dispensaries for the poor in New York that season, there were nearly seventy thousand vaccinations. Every physician, in his private practice, found himself surrounded daily by applicants for the then much prized boon of JENNER. The past year, the city has experienced the excellent result of that faithful effort of the people to obtain immediate protection from the dreaded contagion. And now that lesson will yield permanent and greater results if, by any means, it should lead to the adoption of systematic methods for the vaccination of all children and unprotected persons.

Vaccine Virus and Vaccination.—The dispensaries of the city, by

virtue of their recognized responsibility for the medical care of the indigent classes, have been almost the sole conservatories of vaccine virus, not only for the Metropolitan district, but for the State. Admirably has that duty been performed by them, in the main; but there is such importance to be attached to the quality and constancy of the supply of this prophylactic germ, that it must not be left to chance, nor even to the best charity alone. Great progress has been made in the kind of knowledge that is requisite to insure the scrupulous care and testing of the virus, which is necessary to its perpetuity and its individual effect in full power. At the best, as vaccination is now managed among the people, much is spurious or needlessly untrustworthy. And as compulsory vaccination has been proved to be impossible, except under an imperial government, the sooner the Metropolitan district of this State provides for the systematic conservation of virus in full power, and for the more general application of it, the better it will be for life and welfare in the community.

Scarlatina.—This domestic pestilence destroyed five hundred and sixty-four lives during the first nine months of the year. The abstract of zymotics for this period presents facts relating to its distribution in wards. But while it holds true that this malady is most prevalent, as it is also most infectious, among the tenant-house and cellar populations, it is also painfully true that both its communicability and its malignancy is increased by the foul local atmosphere of such domiciles.

So enduring and diffusible a contagion naturally enough has been very generally regarded as one of the inevitable afflictions of childhood, and, like measles, it has, by some families, been invited rather than avoided. But the duty, to the physician, is plainly to use every effectual means to prevent the distribution of this insidious poison. From the first organization of the Board of Health this bureau has made it a duty to forward to the family where scarlatina is reported fatal, plain advice to gather up and boil for an hour all the infected clothing of the patients, or to immerse the things in dilute chlorinated soda, or in a well-colored solution of permanganate of potassa;* and to ventilate the sick-room, &c., for days very thoroughly. Prompt action recently taken by the

*We have the pleasure of knowing that this advice is gratefully accepted, and that it produces good results, partial as our knowledge of the sick must be, for less than one in twenty cases of this disease proves immediately fatal, and all of them are infectious, and probably in proportion to the degree of malignancy.

sanitary superintendent in regard to scarlatina in tenant-houses will save many lives.

The epidemic movements of this malady are specially interesting in connection with the progress of cholera in different countries, but in some degree, like cholera, the special excremental resultant of the infection unquestionably gives us the surest point of attack upon the epidemic itself.

In a recent report by the Registrar-General of England, that observing officer remarks, "it should not be overlooked that prophylactic measures are available against scarlatina as well as small-pox."

Diphtheria.—This disease destroyed 334 lives during the nine months. Its favorite localities were nearly identical with those of scarlatina. And the fact that a very large number of the deaths from reported scarlatina certify to the Bureau that a diphtheritic membrane became a complicating cause of death, warrants us in suggesting that these uncertainties concerning the real cause of death in the two diseases, when one supervenes upon the other, requires that we should urge the same sanitary care for diphtheria as for scarlatina. Though neither of them limits its ravages to the poor or to particular localities, the danger from each of them increases as the local causes of general ill health increase, and this appears to be especially true in regard to humid, unventilated and crowded habitations. Counted together, the two diseases, diphtheria and scarlatina, have destroyed too much precious young life the past nine months to be lightly regarded. In the coming year we shall preserve special records of their operations throughout the Metropolitan district.

Typhus Fever.—This well known disease of famine and overcrowding has, for the past forty years in this metropolis, fluctuated in its prevalence in periods corresponding closely with those of its greatest prevalence in the British islands at the time of greatest emigration to us from them. And until the Commissioners of Public Charities and the Emigration Commission had prepared their new and excellent hospitals for the reception of fever patients, the entire Metropolitan district was exposed to fearful perils from typhus that was allowed to hibernate in the tenements and lodging-houses of the city. To the prompt action of the commissioners above named, in removing the destitute poor fever patients to the fever hospitals on the islands, and to the active

measures of the Board of Health, we attribute the rapid decline of typhus in New York.

The subjoined schedule of inquiries and returns is constantly bringing to the Board a kind of information that points out some of the lurking places of both forms of typhus fever.

Return of cases of typhus fever and typhoid fever admitted to Hospital, Island, in
the days ending 1866.

Date.	Name of patient.	Age.	Disease, (typhus—typhoid).	About what day of its progress, (as judged by Medical Officer, the day of admission).	Street and No. of last city residence.	From what person or place was this disease contracted.	Remarks.
Month.	Day.						

Typhoid Fever.—Having killed 362 persons in New York the first nine months of the year, it seemed to be a well considered decision of the Board to order this malady to be reported as one that is “contagious and dangerous to public health.” Its localization, and probably its production by foul sewers and filth-sodden ground, and the infective quality of the excremental matter in this enteric fever, are now admitted facts that make it a duty of the sanitary officers to cleanse and disinfect the privies, drains and premises where it occurs. Whoever will examine the evidence regarding the perpetuating and infectious causes of this septic poison will rejoice that the Board of Health, without waiting the settlement of mooted questions in pyretology, has acted upon the facts which are known, and which have revealed the controlling causes of this fever, which, during the war, was enormously augmented in crowded camps, and which has since become more widespread than ever before in our chief cities.

The foul sewers, privies and filth-soaked earth of the crowded city, is ever a ready soil for the deadly germs of this enteric fever. In a recent note upon this malady, Dr. William Farr says, as regards their experience in England: “The impurities of the seeds of the disease can only be eventually got rid of by a vigilant sanitary police, and by effectual destruction of its exciting leaven.” This vitally important view of sanitary duty has, from the first, been taken by the medical officers and fully sustained by the Board of Health.

Erysipelas and Puerperal Fever.—The deaths from erysipelas and the deaths from puerperal fever in New York, though comparatively small in number, are classed with the domestic foes that menace the lives of mothers in such manner as to elicit constant surveillance over the hygienic condition of lying-in wards. It will be observed that in Brooklyn there were but five deaths from puerperal fever against 102 in New York. The relative difference is mainly accounted for in the hospital wards and the crowded tenements of the city that has this excess.

Diarrhœa.—In the subjoined table we read a few of the facts relating to the persons who lost their lives by common flux of the bowels. The succeeding abstract of the records of “cholera infantum” adds the facts and a greater number of deaths by the most fatal form of diarrhœa, and in the most fatal period of life.

Table showing the number of deaths by Diarrhœa, during the nine months ending September 30, 1886.

	Males.	Females.
Under one year of age	270	231
One year and under two	67	63
Two years and under three	16	15
Three years and under four	5	9
Four years and under five	7	1
Total under five years	365	319
Five years and under ten	8	4
Ten and under fifteen	5	4
Fifteen and under twenty	6	3
Twenty and under twenty-five	16	9
Twenty-five and under thirty	11	11
Thirty and under thirty-five	10	11
Thirty-five and under forty	11	22
Forty and under forty-five	12	10
Forty-five and under fifty	12	3
Fifty and under fifty-five	12	13
Fifty-five and under sixty	11	8
Sixty and under sixty-five	20	11
Sixty-five and under seventy	16	15
Seventy and under seventy-five	6	11
Seventy-five and under eighty	6	9
Eighty and under eighty-five	1	8
Eighty-five and under ninety .....	..	3
Ninety and under ninety-five .....	..	1
Ninety five and under one hundred	1	..
Total	529	475
Total of both sexes		1,004
Month.		Total.
April		9
May		8
June		5
July		26
August		48
September		18
Total		114

Nativity.

Ireland	54
United States	32
Germany	18
England	5
Prussia	2
France	1
Holland	1
Nova Scotia	1
Total	114

Ages.

Fifteen to twenty	3
Twenty to twenty-five	10
Twenty-five to thirty	9
Thirty to thirty-five	9
Thirty-five to forty	9
Forty to forty-five	11
Forty-five to fifty	8
Fifty to fifty-five	11
Fifty-five to sixty	5
Sixty to sixty-five	12
Sixty-five to seventy	15
Seventy to seventy-five	8
Seventy-five to eighty	2
Eighty to eighty-five	2
Total	114

Irish.

Occupation.	No.
Blacksmith	2
Carpenter	2
Clerk	1
Domestic	14
Housekeeper	4
Laborer	13
Mechanic	1
Physician	2
Peddler	2
Patternmaker	2

Occupation.	No.
Seamstress	2
Soldier	1
Tailor	2
Watchman	3
Washerwoman	2
Wheelwright	1
Weaver	1
Total	<u>54</u>

American.

Coachman	1
Carman	2
Chairmaker	1
Clerk	2
Domestic	2
Druggist	1
Engineer	1
Gardener	1
Housekeeper	4
Laborer	5
Mechanic	1
Merchant	1
Painter	1
Seamstress	1
Soldier	1
Sailmaker	1
Salesman	1
Seaman	1
Shoemaker	1
Tobacconist	1
Weaver	1
Whitewasher	1
Total	<u>32</u>

German.

Baker	1
Butcher	1
Clerk	1
Carpenter	2

Occupation.	No.
Domestic	3
Farmer	1
Housekeeper	2
Ironmonger	1
Laborer	3
Physician	1
Shoemaker	1
Tailor	1
Total	18

English.

Clerk	2
Stonecutter	1
Sculptor	1
Weaver	1
Total	5

MISCELLANEOUS NATIONALITIES.

Prussia.

Baker	1
Farmer	1
Total	2

Nova Scotia.

Laborer	1
---------------	---

France.

Vice-Consul	1
-------------------	---

Holland.

Peddler	1
---------------	---

Dysentery.—The subjoined table presents the facts relating to this disease, as regards ages, occupations and nativity of those that died of it in the six summer months. For a view of the geographical distribution of dysentery, see the abstract of the zymoties in the second and third quarters of the year:

Table showing the number of deaths by *Dysentery* during the nine months ending September 30, 1866.

	Males.	Females.
Under one year of age	60	65
One year and under two	40	35
Two years and under three	12	7
Three years and under four	10	4
Four years and under five	6	6
Total under five years	128	117
Five years and under ten	20	19
Ten and under fifteen	4	6
Fifteen and under twenty	5	10
Twenty and under twenty-five	18	10
Twenty-five and under thirty	18	22
Thirty and under thirty-five	9	18
Thirty-five and under forty	14	9
Forty and under forty-five	9	6
Forty-five and under fifty	12	9
Fifty and under fifty-five	6	10
Fifty-five and under sixty	7	11
Sixty and under sixty-five	10	6
Sixty-five and under seventy	4	8
Seventy and under seventy-five	3	7
Seventy-five and under eighty	3	5
Eighty and under eighty-five	2	4
Total	272	277
Total of both sexes		549
Month.	Total.	
April	2	
May	1	
June	3	
July	19	
August	29	
September	28	
Total	82	

Nativity.

Ireland	35
United States	18
Germany	12
England	2
Canada	2
Scotland	1
Poland	1
France	1
Total	<u>72</u>

Ages.

Fifteen to twenty	5
Twenty to twenty-five	6
Twenty-five to thirty	13
Thirty to thirty-five	14
Thirty-five to forty	6
Forty to forty-five	5
Forty-five to fifty	10
Fifty to fifty-five	3
Fifty-five to sixty	4
Sixty to sixty-five	9
Sixty-five to seventy	3
Seventy to seventy-five	2
Seventy-five to eighty	1
Eighty to eighty-five	1
Total	<u>82</u>

Irish.

Occupation.	No.
Carman	1
Clerk	1
Domestic	9
Engineer	1
Farmer	1
Grocer	1
Housekeeper	4
Laborer	9
Salesman	1
Seamstress	3

Occupation.	No.
Storekeeper	1
Soldier	1
Soap-boiler	1
Washerwoman	1
Total	35

United States.

Broker	1
Baker	1
Brakeman	1
Carpenter	2
Clerk	3
Cooper	1
Grocer	1
Machinist	2
Merchant	2
Shoemaker	1
Seamstress	2
Salesman	1
Total	18

Germans.

Agent	1
Butcher	1
Cabinetmaker	1
Hotel-keeper	1
Laborer	1
Merchant	1
Painter	1
Seaman	1
Shoemaker	1
Tailor	1
Tinsmith	1
Upholsterer	1
Total	12

MISCELLANEOUS NATIONALITIES.

England.

Occupation.	No.
Plumber	1
Minister	1
Total	<u>2</u>

Canada.

Dressmaker	1
Printer	1
Total	<u>2</u>

Poland.

Merchant	<u>1</u>
----------------	----------

Scotland.

Porter	<u>1</u>
--------------	----------

France.

Picture framer	<u>1</u>
----------------------	----------

"*Cholera Infantum*" is truly a misnomer, as it fails to indicate any pathological fact that characterizes the malady. In a very large proportion of the cases, it is a kind of death by starvation; but whether the want of assimilation and nourishment is a primary or a resulting event, there is a marvellous degree of importance in the lessons which this fatal disorder of infant life teaches in our cities. And, to the hygeist, there is no other index that so quickly points to the entire list of the causes of diarrhœal maladies, in old and young. In the study of causes, and of hygienic indications, which the guardians of health must unceasingly pursue, the following words of Dr. Simon to the General Board of Health in England, guide to preventive measures:

"Nothing in medicine is more certain than the general meaning of high diarrhœal death-rates. The mucous membrane of the intestinal canal is the excreting surface to which nature directs all the accidental putridities which enter us. Whether they have been breathed, or drunk, or eaten, or sucked up into the blood from the surface of foul sores, or directly injected into the blood-vessels by the physiological experimenter, there it is that they settle and act. As wine 'gets into the head,' so these agents get into the bowels. There, as their universal result, they tend to produce diarrhœa—simply diarrhœa, in the absence of specific infections; specific diarrhœa, when the ferments of cholera and typhoid fever are in operation. And any such distribution of diarrhœal disease as has just been noticed, warrants a presumption—indeed, so far as I know, a practical certainty—that, in the districts which suffer the high diarrhœal death-rates, the population either breathes or drinks a large amount of putrefying animal matter."

Such are the chief causes, and such the hygienic indications of the diarrhœal disorders. We know there always is a certain (very small) number of deaths from accidental diarrhœa that has no relation to these filth causes. But the excesses and the undulations of the total of diarrhœal deaths alike indicate the presence and operation of filth poisons. And when such things are once impregnated by malignant cholera, there pestilence has sway, unless hygiene interposes. This view of the value of daily records, and the geographical and sanitary mapping of the mortality by diarrhœal maladies, was maintained and acted upon in the daily service of this bureau. And especially has it seemed important to watch very closely the course of diarrhœal mortality

in childhood; for, any noticeable excess in fatal fluxes of the infantile population of the district points to removable causes, almost as unerringly as the needle to the magnet. Yet, in the midst of every other insalubrity of their miserable homes, nursed in the lap of negligence and ignorance, more than half of all the infants born in these cities only wait the foul exhalations of the low quarters of the city in summer to be hopelessly swept into their little graves. And this combination of the ills of childhood in our crowded districts gives all the more significance and delicacy to the infantile diarrhœas, as indicating the presence of foul air and its filthy sources.

The Coincident Course of Diarrhœa and Cholera.—By referring to the diagrams in the accompanying report on the epidemic, the coincidence of fatal diarrhœas with the course of Asiatic cholera is shown. And still more forcibly the same facts are presented in the tables of zymotic deaths in the second and third quarters of the year.

Every summer the past twenty years has witnessed a fearful slaughter of infants in New York. The badly defined term "Cholera Infantum" stands recorded against the registry of one thousand five hundred and sixty-six of the infant deaths in the six months ending October 1, 1866; one thousand four hundred and ninety-three in the year 1865; one thousand three hundred and eleven in the year 1864; and in the twelve years preceding 1866, sixteen thousand seven hundred and twenty-eight deaths from "Cholera Infantum" were recorded in New York; seven thousand five hundred and eighty deaths from "diarrhœa," and one thousand and fifty-four from "cholera morbus." As that period included no epidemic year, the mean yearly number of deaths from these causes respectively, may properly be regarded as the average degree of mortality to be expected from them in the same population in ordinary years. The following table illustrates the facts we need to present here:

Abstract showing the course of diarrhoeal diseases and a coincidence of excess of them where cholera prevails.

Cholera and the four Diarrhoeal Diseases.	Cholera infantum.	Cholera morbus.	Diarrhoea.	Dysentery.	Total diarrhoeas exclusive of cholera.	Cholera.	Mortality from all diarrhoeal diseases including cholera.
Average mortality in eleven years (1855-65).....	1,518	112	588	344	2,502	5	2,567
Total from each cause in 1865.....	1,493	88	704	541	2,826	10	2,836
Total from each cause in 1832.....	334	93	104	136	667	3,513	4,180
Total from each cause in 1849.....	926	241	783	1,256	3,206	5,071	8,277
Total from each cause in 1854.....	1,525	301	1,108	839	3,793	2,509	6,302
Total from each cause in 1866 (eleven months).....	1,686	243	1,119	653	3,701	1,210	4,911

When we have gleaned the records of all the outbreaks of cholera upon the continent, there will be a broader basis for generalizations; but, without attempting any deductions at present from the above statistics, it is proper to state that, as they now stand in those columns, they correspond in all respects with the same elements of the mortuary records in all great cities visited by cholera in Europe.

Let theorists speculate as they may concerning the nature and fatal workings of the cholera infection, the officers of health in every city menaced by the epidemic may well take this as practically true, that the excess of mortality from diarrhœal maladies, in the presence of Asiatic cholera, and however obviously distinct from the characteristic diarrhœa of the cholera itself, is an omen of the epidemic, and is a source of peril to the public health, that demands the utmost vigilance of the sanitary authorities.

There is a common opinion, more or less prevalent in the medical profession as well as among the people, that a great portion of the deaths by the diarrhœal disorders, in the season of cholera, are truly cases of that epidemic. In the Metropolitan district, and particularly in these two cities, the ratio of the diarrhœal causes of mortality began to increase rapidly the last week in June. In July that increase became so great as to awaken profound concern in the minds of sanitary officers, who knew the circumstances and the localities of this class of deaths. The medical history of every case has been as carefully investigated as was practicable, and as the general result of our study of the evidence, we now record the fact that, with the exception of a certain proportion of the cases of "Cholera Morbus," the case of diarrhœa, cholera infantum, and dysentery, and the part of the so-called "Cholera Morbus," did not have the essential characteristics of epidemic cholera.* Yet this was true, viz.: that the *fatal* diarrhœas of every name occurred

*The sanitary officer is, of all men, most intelligently alive to the unsettled as well as the settled questions that relate to the influence and nature of the cholera poison, and other pestilential infections. And we may expect, ere long, to define with practical accuracy the natural limitations of the cholera infection, or, at any rate, expect to acquire an absolute control over it. Observing physicians in all parts of the world seem fully agreed in the opinion that whenever cholera spreads as an epidemic, there will be an unusual number of fatal diarrhœas in old and feeble persons and in children. In our report of cholera this year the fact is noted that such diarrhœas kept pace with the cholera epidemic.

The fact was very noticeable in New York that wherever there was bad local drainage, or a filthy and populous block, there, fatal diarrhœa was prevalent, and that Asiatic cholera was not seen in all, or even in half, of those places. The practice of giving to every family and block, where there is fatal diarrhœa, essentially the same sanitary care as though cholera were actually there, has become well established.

almost exclusively in the very localities that cholera chiefly sought. Their ravages were confined to filthy quarters. And, dropping all collateral questions, we may safely conclude from this, as well as from every other view of the facts, that the same local causes, bad sewerage, filth, domestic crowding, and want of reasonable hygienic care produced these foul diseases.

The fact that zymotic causes destroyed 7,450 lives in New York, and 2,351 in Brooklyn, in the first nine months of the year, will convey to the Board of Health a true indication of the peril of the public health, for this is the group of diseases in which we find both the indications and the experience of all kinds of pestilence. Look at the proportion which this great group of preventable deaths bears to the total mortality from all causes. In New York the 7,450 is equal to 35.13 per cent. of all that died in the city, while the 2,351 in Brooklyn is a proportion equal to 44.50 per cent. of all deaths registered.

Constitutional Diseases.—This class of causes, including all cancers, dropsies, etc., of the diathetic kind, and all the pulmonary consumption marasmus, scrofula, etc., of the tubercular kind, destroyed, in all, 4,667 lives in New York, and 1,060 in Brooklyn, and this equals 22 per cent. of deaths from all causes in the former 20.06 per cent. from all causes in the latter city.

The table upon the next page presents facts concerning deaths from consumption in New York. The records show that a little more than twelve per cent. of all the mortality in the city of New York, and less than ten per cent. of the total mortality of Brooklyn, was, in these nine months, charged to consumption, which, in the city of Boston, destroyed about 17.90 per cent. of all who die there; and in the State of Massachusetts 16 per cent., in London 14.23, and in all England, 10.78 per cent. of the total mortality. And in our two cities it was often true, before our certificates of cause of death required definite and full specifications, that the name consumption seemed not unfrequently to mean simply "come to his end."

The climate of this section of the State does not, like the coast districts of Massachusetts, and like vast districts in the high plateaus and valleys of the central and northern sections of the northern States, predispose to phthisis. But we needlessly breed this degenerate disease in thousands of badly ventilated workshops, schoolrooms and cellars in our cities. It is noticeable that less than thirty per cent. of these city consumptives that died in

the six summer months were Americans; that the age of greatest fatality was that of the first transition period from adolescence, from twenty to twenty-five, and that nearly twenty-five per cent. of this consumption occurred in laborers and house-servants. In proportion as the bureau preserves more complete records of the constitutional diseases, its registers and abstracts will, ere long, acquire a practical value as to bases for useful generalizations.

Diseases of the Nervous System.—Of the 3,127 deaths that were charged to various disorders of the nervous centers, there were 310 attributed to “sunstroke” and “effects of heat.” These might be registered under the head of accidents, and by some statisticians they would have been so entered. But the fact that nearly all the so-called sunstrokes supervened upon enfeebled and starved conditions of body, on the one hand, and upon over stimulated and disordered brains and blood, on the other hand, it appears best to record such deaths in the class of nervous disorders. And the next and chief element in this group of causes is charged to “convulsions,” a real but frightful way of dying, but not the cause which sanitary and medical science requires to be registered. The last sad act in the short drama of infant lives that have been destroyed by the accumulated ills of unhealthy homes and bad nursing, no one term in the statistical nosology can be substituted for convulsions. We now record the remote and complicating conditions of disease with which the convulsive phenomena and brain congestion were associated. Convulsions and congestion of the brain were charged with 1,601 deaths in New York, and 362 in Brooklyn in the nine months; and nearly all were children under ten years of age.

Diseases of the Circulatory System.—Of the 528 deaths charged to disorders of the blood-vessels, 411 were reported as disease of the heart, and 27 others were from aneurism of the aorta or of the heart itself. Brooklyn has far less mortality from these causes. It was from the hospitals and the sea-faring class that the excess occurred in New York.

Diseases of the Respiratory Organs.—Of the 1,921 deaths from strictly local diseases of these organs 1,015 are charged to inflammation of the lungs, and of this number there were 535, or more than half, children under five years of age. The fact is known to our dispensary physicians that much of that infant mortality from lung disease is directly chargeable to foul and stifling atmosphere in the homes of the poor. Inquiries, now in progress by this

bureau, would prove that about eighty per cent. of the fatal pneumonias in New York occur in the tenant-house and cellar population. It is the just pride of physicians in our day that they seldom fail to recover their patients from primary pneumonia except the domestic wants and foul air of the domicile prevent.

Bronchitis, which destroyed 369, and congestion of the lungs, that destroyed 256 lives in New York, elected chiefly the very young and the very aged. By referring to the general abstract of deaths it will be seen that 391, or more than half of all the fatal bronchitis and lung congestion occurred in children under five years old, and that 53 occurred in persons beyond the age of sixty-five years. Thus these causes of death followed the law of the pneumonias, as just mentioned, and more, our recent inquiries go to show that tenement houses and slums of poverty are to be charged with nearly all these deaths. Poisoned and irritated by foul air, the lungs fail in their functions, and exhibit in the death, the fatal effects of the impurities they inhaled in life. It is a noticeable fact, that the pulmonary inflammations as a class, and the maladies just specified, particularly, stand charged with far less fatality in Brooklyn than in New York. The ratios are as 5.79 in Brooklyn to 9.06 in New York. The explanation of this difference is to be found in the miserable crowding of the poor in the latter city.

Diseases of the Urinary System.—Of the 403 deaths charged to these maladies, there are 301 attributed to that very incurable disease termed Nephria, or Bright's disease. In Brooklyn this class of disorders had a lower ratio in the mortality table, but Bright's disease had its uniformly chief place in the class. We forbear comment upon this particular cause of death, except to mention that it is proved to be so inevitably fatal when fully established as an organic degeneration, and yet so preventable and avoidable in its first causes, that we shall preserve and systematically record all the facts the Bureau can obtain concerning the classes, the ages, and habits of its victims, and the ascertained causes connected with it.

Whoever, in summer, walked observingly through the different quarters of our cities, and whoever, in winter time, will make tours of sanitary inspection in these widely different localities which have given such checkered variety to our mortality charts, cannot fail to be impressed with the fact that this wide difference in the death pressure is fully symbolized in the streets, gutters,

doorways and domiciles of the differing localities. And when we find added to such obvious things, the devitalizing social and domestic conditions that break down the bodily and the mental powers among the lower classes, we begin to comprehend the extent and nature of the combined forces which sweep so many of the city's poor into the grave. Observation also proves that there is a constantly increasing tendency in the ignorant and dependant classes to gravitate into denser masses and deeper evils, which must continue more and more to demand the vigilant care of the sanitary officer, the moral teacher, and the social economist.

And as we daily glance over the chart of death's doings, and of dispensary and hospital returns of sickness under treatment, the work of sanitary reform of the slum seems a work no less of purest mercy than of self-protection, and the proffer of improved homes for the city's poor by merchants and bankers, inspires new hope in the minister of religion and in the officer of health, that the destructive pressure of moral and physical death may yet be overcome.

But while the fact is so apparent that preventable causes of death are conjoined with every physical and domestic privation, we do not lose sight of the fact that there are special contagions and infections, germs of fatal disease in these cities, that somewhat depend on the soil and drainage of localities, and upon local causes that in many instances are fatally operative even in quarters that, upon a superficial inspection, may appear to be free from fault.

For example, there are in the twenty-first ward, with all its fashion and grandeur, great flanks of abiding nuisances, and in those sections we find a nidus of sickly families and unhealthful blocks that jeopard the entire ward. Hence we see cholera, typhus and typhoid, and scarlet fevers, overleaping the limits of the foul and unventilated blocks, where the tenant-house poor, styed in crowded masses, had concentrated and diffused these domestic poisons, thus proving that, as regards the rich and the poor, "no man liveth to himself alone."

There also are some peculiar infections, like cholera and the typhoid or enteric fever, which have such an alliance with porous and filth-soaked grounds, and foul sewers, that wherever their presence is allowed by any negligence to impregnate and increase in such a soil, its deadly effect will jeopard any class of people that dwell there; cesspools, unflushed sewers, wet cellars and filthy grounds, when they have acquired any infection, will imperil

the surrounding inhabitants though they dwell in palaces. And we shall find that, as these cities of the Metropolitan district fill up more densely, the sanitary government will need to increase its watchfulness over the causes which localize, diffuse, or intensify particular maladies. To know and control all such causes would be to control and prevent most, and probably all, the fatal epidemics that cities dread.

Local Diseases, including almost every kind of inflammatory disorder as well as the greater part of those organic maladies that result from inflammations, destroyed 32.65 per cent. of all who died in New York during the nine months; and in Brooklyn the same causes produced but 25.16 per cent. of the mortality. In how great a degree this great class of inflammations and their consequences may be prevented, improved sanitary circumstances and habits in the great masses of the people alone can demonstrate. Medical science has already proved its ability to deal successfully with most of them when seasonably brought under its care, if the physician is aided by all the helps of domestic and personal hygiene. And while the sanitary government is sweeping away the causes of zymotic mortality, the physician will be rejoicing in the rapidly multiplied chances of success in his prevention and control of the most prevalent and fatal of the local diseases. The saving influence and achievements of preventive medicine as applied to the chief causes in the zymotic, the constitutional, and the local diseases, will eventually prove that the importance of sanitary science is not over-rated in our day. In these three classes of disease death reaps its great harvests. The first nine months of the year gave—

In New York.		In Brooklyn.
From the zymotic diseases 7,450 deaths,	}	2,328 deaths,
or 35.13 per cent. of total mortality.		44.06 per cent.
From constitutional diseases 4,667 deaths,	}	1,060 deaths,
or 22 per cent. of the total.		20.06 per cent.
From local diseases 6,924 deaths,	}	1,329 deaths,
or 32.65 per cent. of the total.		25.16 per cent.

Thus we find that 89.78 per cent. of the total mortality in New York, and 80.28 per cent. in Brooklyn, is caused by these three groups of diseases. We group them thus, that we may view them in relation both to causes and results. And as we see them, in our daily walks among men, massed in solid combinations against the laws of physiological life and its standard of three-score years

and ten, these allied forces of foul infections, constitutional ailments, local inflammations, and untimely degenerations, might appear to be invincible had not experience and nature proved that by comprehensive and direct agencies sanitary science and medical skill conjointly, can master the chief of these enemies of life.

Deaths by Violence.—Of the 690 deaths by violence of various kinds there died 624 by accidents and negligence, 8 by the assassin's hand, 44 by suicide and by the hangman. *Drowning*, was by far the most frequent of all the "accidental deaths." *One hundred and eighty-four*, was the total number of the drowned about the water-sides of New York, and thirty-six the number of drowned recorded in Brooklyn in the nine months. Of burns there were 73 deaths in New York, and only 6 in Brooklyn. The fires in tenant-houses in New York contribute the largest share, and careless *storage* and handling of kerosene adds a large quota to deaths from burning. These and the other deaths from violent causes are tabulated as follows :

Deaths by Accident, Negligence, and Violence, in the city of New York, from January 1 to September 30, 1866.

Accidents, negligence	152
Burns and scalds	73
Drowning	184
Falls, not specified	94
Railroad casualties	31
Casualties by other vehicles	8
Homicide	8
Suicide by gun-shot	7
Cut, stab	7
Poison	18
Drowning (suicide)	3
Hanging	8
Jumping from heights	1
Execution (hanging)	1
Other violent deaths	95
Total number violent deaths	690

Mortality at Different Periods of Life.—The system of weekly, monthly, quarterly, and annual abstracts of death returns, adopted in the bureau, shows the number and percentage of deaths in each

quinquennial (five years) period of life, and in each year for the first five years.

By referring to the last pages of the general abstract (pages 298 and 299) in this report, the totals and percentages can be read for the first three quarters of the year. And by referring to the population abstracts of the two cities the reader will readily obtain the elements for any desired estimation of the rate of mortality in any given period of life, by any particular disease, by any group and class of diseases, or from all causes.

We would call attention to the fact that the mortality in the first year of human existence in New York was equal to 29.51 per cent. of the aggregate deaths at all ages, and in the children of the city under five years old, there were 10,123 deaths, or 47.73 per cent. of the total mortality at all ages.

The excessive death rate in infancy has, with the medical profession, been justly regarded as one of the sure indications of growing causes of insalubrity in the Metropolis. The fact that this excess occurs mainly among the poor, or at least in the tenant-house districts of these cities, can scarcely be quoted as a mitigating circumstance, for the "poor classes" outnumber the population that dwells in comfort. The chief causes that militate against infant life here, reach beyond the cradle to more mature age, and if they are successfully resisted, or, at least, do not kill persons of hardy growth, they nevertheless are not harmless to any class of the population. Neither the stern results of Spartan cruelty to infants, nor the mistaken philosophy of Malthus, can give a hopeful tone to this record of blighted young lives.

The following abstract of special records of infantile mortality in the first weeks and months of life shows certain facts that are accumulating for subsequent study:

Table of Mortality in the First Year of Life, for the Nine Months ending September 30, 1866.

	No. of deaths.
Under one week.....	624
Between one and five weeks.....	1,070
Between four to eight weeks.....	764
Total in third month.....	470
Total between third and sixth months.....	1,270
Total in the last six months of the first year.....	2,060
Total deaths in first year of life	6,258

The rate of mortality in children under five years of age in New York, is greater than in any city with which this Board of Health has correspondence, and the causes of this excess will best be sought in the miserable housing and habits of the laboring classes, and in the multiplied sources of foul air in our two cities.

From various data now in hand, the conclusion is warranted, that of the 2,500 children born alive in the city of New York in twelve months (assuming the birth rate for this estimation, is 1 birth to 32, of a population estimated at 800,000), death has in each of the past two years taken nearly one-third the total number before the first birthday.* This slaughter of innocents may well awaken deeper thoughts and evoke broader purposes, than ever were excited by philanthropic sentiment and sympathy. The hygeist and social economist bases important conclusions and projects of thorough sanitary reform upon the indications which these high death rates give. In New York we lost, in the nine months, one child under five years old, out of every seventy-five or eighty of the city's population. In Brooklyn there was one such death in every one hundred and twelve persons. The localities, the domestic and social conditions and parentage of these dead infants are recorded, and the records will ere long repeat and confirm the lesson that has already been interpreted as follows, by one of the most profound medical philosophers of our times:

“The death-rates of young children are among the most important studies in sanitary science. In the first place, their tender young lives as compared with the more hardened and acclimatized lives of the adult population, furnish a very sensitive test of sanitary circumstances; so that differences of infantile death-rates are,

* The infant mortality in New York, in the eleven years preceeding 1866, has footed up as follows:

	Total deaths under 1 year.
1855	6,771
1856	6,437
1857	6,905
1858	7,109
1859	6,599
1860	6,087
1861	6,189
1862	5,720
1863	6,118
1864	6,058
1865	7,217

under certain qualifications, the best proof of differences of household condition in any number of compared districts. And, secondly those places where infants are most apt to die are, necessarily, the places where survivors are most apt to be sickly; and where, if they struggle through a scrofulous childhood to realize an abortive puberty, they beget a still sicklier brood than themselves, even less capable of labor, and even less susceptible of education. It cannot be too distinctly recognized that a local mortality of children must almost necessarily denote a high local prevalence of those causes which determine a degeneration of race."^{*}

Mortality in the later Periods of Life.—By referring to the abstracts of the death records, and to the accompanying population tables, it will be seen that in the five year periods, from the twentieth to the fortieth year of life, the rate of deaths, gradually and but slightly increased in degree in each period, is charged with about five per cent. of the total mortality in all ages, while, of course, the total number living, of each succeeding period, was diminishing by the added numbers of the dead in preceding periods. But, upon so brief an experience, we forbear deductions that require results of successive years.

The design of this first report of the bureau of vital statistics will not be attained, nor will the leading object of its methods and its labors have proved successful, if they fail, even in these unattractive masses of statistics, and in the less attractive and unadorned words of these records of mortality, to strengthen, the convictions of men in regard to the sacredness of human life, and the responsibility and reciprocal interests of society and the civil government in both guarding and improving it.

The records of this bureau already begin to show that much life is wasted for lack of that knowledge and physical care which the more favored ranks of society are in duty bound to extend to those who suffer such needless evil. To arrange and aid proper methods for constantly increasing and applying the knowledge that is needed concerning life and health was, from the first, made the leading duty of the bureau. And it is, at the outset, the chief praise of the new sanitary government of the Metropolitan dis-

* Papers relating to the sanitary state of the people of England, report of Dr. John Simon, Chief Medical Officer of the General Board of Health in 1858.

trict that, without a delay, it set about discovering the sources of peril and injury to life and health in the district.

In concluding this report, there remains a duty that grows out of the daily study of the causes, localities and circumstances of death in the metropolis. This study of hygienic conditions has led to logical conclusions regarding preventive measures of sanitary care, and the adoption of practical methods of sanitary inquiry and records relating to the living population.

Florence Nightingale has truly remarked that "the most minute and practical examination of personal and local conditions, is the very foundation of sanitary statistics.*

FIRST.—*Hygienic Appliances, Preventive Measures.*—The very first want, and the most unthought of evil, that stands connected with the high death-rate in the city of New York, is found in the unventilated tenant-houses, in which more than half the total population is now packed. Whoever is familiar with the real significance of those names that the physicians in our cities have given to the causes of death, as we register them, whether in the lists of the zymotic, the constitutional, or the local diseases, will recognize a preponderating sum of them that were mainly caused by the foul in-door atmosphere of unventilated domiciles and workshops. Not only do the weekly abstracts and charts of the zymotic mortality in the city indicate this fact, but wherever we find a fever-nest, we also find marasmus, scrofula, and every kind of pulmonary disease are domiciled in the same class of habitations.

In the construction and management of the tenant-houses, no adequate provision is made for a sufficient supply of fresh outdoor air; their stairways are dark and stifling; their living-rooms are rarely allowed to have an open fire-place; and their dormitories are mostly dark *culs de sac*. Here, then, is a field ready in all respects for the planting and fatal growth of phthisis and every degenerative or destructive disease.

Nor is this neglect of air-supply found in the tenant-houses and city slums alone. In school-rooms, saloons, boarding-houses, and not a few of our public buildings, the same evil is experienced in some degree. And, viewing only the causes of preventable disease and their fatal results, we unhesitatingly state that the very first sanitary want in New York and Brooklyn is ventilation—ventilation supplied in all existing tenant-houses, work-rooms,

* *A Contribution to the Sanitary History of the British Army.* London, 1859. Folio.
[Assem. No. 241.]

school-rooms, and places of assemblage, and in all that shall hereafter be constructed. Until the duty of providing for abundant fresh air supply becomes a matter of hygienic regulation and requirement, the public health will be subject to needless perils, and the death-rates will continue to be excessive.†

IMPROVED DWELLINGS FOR THE POOR.

In no other city in the civilized world is there to be found half a million people so unhealthily housed, as a class, as the tenant-house population of New York. In less than sixteen thousand houses, on lots that average scarcely twenty-five by one hundred feet, there dwell nearly five hundred thousand people; and in the cellars of those houses, and a few hundred others, are found nearly sixteen thousand more poor, whose poverty and ignorance allow no election of better homes.

These poor, and the greater part of the entire tenant-house population, will continue to reside near the business sections of the city. To prepare for them and the ever increasing numbers of the city's laboring classes, such dwellings as the munificence of Mr. Peabody and the public enterprise of Alderman Waterlow have prepared for the London laborers' home, and to maintain ample and well conducted lodging-houses, under strict police surveillance, in our metropolis, would be to multiply the domestic happiness and virtues of many thousand families, and amazingly diminish the amount of sickness and death among the laboring poor. And, fortunately, the New York laboring classes will quickly appreciate and occupy, at remunerative rents, such dwellings as they need, if they are located where their vocations and preferences compel them to reside.

Typhus and cholera have found no foothold in the improved dwellings in London; and in our city, during this epidemic year and in the very focus of cholera, we have seen that the well ordered, well ventilated, and populous mission houses in the Fourth and

† The Board of Health may find, indeed it has found, that its humane endeavors are practically opposed by a class of miserable people, who neither care for the health of their neighbors nor for the welfare of the public. And the sanitary officers, during the summer, have found some classes so brutalized by low life that, as Ruskin truly says, they "resist every effort to lead them into purity of habit and habitation, and to give them wholesomeness of air, as a new interference with their liberty," "insisting on their right to helpless death." But this kind of obstructiveness to sanitary improvement in New York is mostly limited to certain tenant-house owners and middle-men. The poor are generally grateful for what the sanitary authorities do for their welfare.

Sixth wards have remained unharmed by the epidemic. (See the appended report on cholera.)

Control of Portable Infections.—Typhus, small-pox, and scarlatina, in crowded dwellings, and under the care of ignorant and needy families, are so liable to have their infectious excreta perpetuated and spread by means of contaminated clothing, that it has become an important sanitary question how best to control and destroy all such infection without destroying the articles of clothing and bedding themselves.

The trial of steam-heating for such disinfection upon the floating hospital has already been mentioned. Eight years' trial has confirmed our best expectations regarding disinfection of clothing by heat. But, in the course of the correspondence of the Board of Health, the chief medical officer of health in Liverpool, Dr. Trench, also Dr. Mapother, the learned health officer of Dublin, and a large number of hygeists in Europe have testified to the entire efficacy of heat for this purpose. In the cities of Liverpool and Dublin the sanitary authorities have established portable and permanent heating chambers, for the disinfection of bedding, upholstery, and clothing of the poor, and others who have not facilities at home for adequate purification of such articles. The facility with which bromine, carbolic acid, chlorine, or permanganate of potassa may be combined with such steam heating, promises entire success in the plan of purification which, so far as we know, was first tested by sanitary authority at the quarantine hospital of New York.

As regards the soiled and saturated clothing of cholera patients, the experience of the sanitary superintendent and the inspectors the past season in the employment of boiling heat for disinfection, seems entirely satisfactory. The importance of a popular dissemination of this knowledge cannot be over-estimated in regard to the arrest of the domestic pestilences and those portable infections that breed epidemics, such as typhus, yellow fever, and cholera.

Dispensary Aid to the Sick.—The admirable system by which the incorporated dispensaries of New York and Brooklyn offer medical aid to the indigent classes, constitutes one of the best of sanitary safeguards. But to insure their highest measure of usefulness, they not only need to be kept in daily communication with the Board of Health, as they now are, by means of morning reports to this Bureau, but require such pecuniary aid from the public as will enable them to insure a more complete care of sick families.

The city dispensaries offer the proper channel for carrying into practical operation such a system of skilled nursing and care of the sick, and such hygienic instruction and aid to the ignorant and needy, as they so much require for their own and the public welfare. In that good work, women will yet find an ample field for her quick intelligence and religious love of doing good. In Bristol, Manchester and London, such work by specially gifted women is now in progress.

Chemistry and Microscopy.—The food articles and beverages that are palmed off upon poor families that purchase and live “from hand to mouth,” are variously and very perniciously adulterated in many quarters. Not a little of the fatal inflammations of stomach and bowels, of the diarrhoeas, the anæmias, and the infant mortality in the poor neighborhoods, can be prevented only by the intervention of chemical and microscopical analysis of food articles, and a publication of results, as was done by Dr. Hassall and Mr. Wakely some years ago in London.

The systematic chemical analysis of all beverage, including the ordinary water-supply, at occasional intervals, would provide an additional safeguard to life in the sanitary district. During the past summer there were cases of sudden and fatal illness after the use of certain beverages; and at the height of the cholera epidemic we witnessed beneficial results from the removal of a pump-handle that was pumping privy soakage for nearly a hundred families; such facts should everywhere establish the utility of the chemical tests for organic putrelage in suspected well water.

Sanitary Care of Emigrants.—The extent to which the public health is jeopardized by the continued disembarkation and presence of freshly arrived foreign emigrants can scarcely be appreciated except by scrutinizing inspection of the persons, the baggage and bedding, and the various places of rendezvous of this class of persons. A practical familiarity with the sanitary wants of these people warrants the statement, that until the State, or the Board of Health for the State, provides adequate facilities for cleansing both the emigrant and his clothing and baggage, before he is landed in the city, every portable infection—typhus and cholera especially—will menace the Metropolitan district and the continent, whenever the ports of Europe have such infections to ship to us. Sanitary appliances at the Quarantine station, and not the absurdities of protracted detentions testing the limitations of infections self-productive, are required in the most absolute sense

for the security of the public health, and scarcely less, for the welfare of emigrants themselves. In this reform, not the metropolis alone, but the whole continent is interested.

FREE BATHING AND WASH-HOUSES FOR THE POOR.

More than half the people of New York and Brooklyn, dwell in houses that neither have a bath-room nor such arrangement of the family domicile that any apartment can, with decency, be used for bodily bathing. Consequently, vast numbers of the poor and their children go unwashed. And this is no slight evil to personal and public health in our dense population; for, from the surface of half a million people there exhales (at the lowest estimation) in a single day, not less than about two hundred and fifteen pounds of excremental matter by the pores of the skin and lungs, fifteen hundred pounds of such effete and offensive matter in a single week, and more than three tons of it in a month; in such a population and in such homes as theirs, that effete matter is not washed away from their bodies by the surrounding foul air. They literally wallow in filth and exhale poisons.

The personal and family health of the poor, and the security of the public against filth infections, require that some system of free bathing should be instituted as a sanitary measure, and that the baths for the poor should be numerous and very conveniently located. The fact that the bath and wash-house which the generous and practical philanthropy of the late Mr. Robert B. Minturn and his associates established, did not become a remunerative enterprise, need not deter the public from organizing and maintaining such sanitary establishments in both these cities. Argument upon this subject is unnecessary. The facts we mention are admitted on all hands. The only question is: Can a system of free public baths be so administered as to insure the attainment of their object, viz: to bathe the people who most need to bathe, and at the same time not incur an unwarrantable expense to the municipal government? In the city of Boston the experience of the local authorities in the organization and management of their six salt water bathing houses, established the past summer, has removed all doubt of success in attaining the objects of free baths. The subjoined abstract of the statistics of those six baths, shows the costs and results in the first four months of the system, which was organized late in the spring, 1866:

BATHING HOUSE.	June.		July.		August.		September.		Grand total.		Per cent of towels to bath.	Cost of each bath house.	Average cost of each bath.
	Total baths.	Towels.	Total baths.	Towels.	Total baths.	Towels.	Total baths.	Towels.	Total baths.	Towels.			
1	17,030	923	33,519	1,626	78,007	632	8,537	268	77,083	3,449	.047	\$4,213 04	0.05
2	22,455	546	44,022	524	27,309	216	14,218	71	108,004	1,357	.012	2,357 82	0.02
3	3,317	125	17,441	104	6,574	17	1,258	0	28,590	246	.003	2,772 55	0.09
4	22,708	231	24,590	215	14,538	37	6,248	5	68,684	508	.007	2,712 72	0.03
5	7,798	163	14,191	461	7,620	133	4,699	51	34,308	311	.023	2,308 25	0.06
6	33,772	49	54,003	197	23,083	111	6,763	91	117,021	448	.003	3,039 67	0.02
Totals	107,070	2,060	187,766	3,127	97,131	1,146	41,723	486	433,690	6,819	.100	\$17,404 05	.04

Typhus, and a great variety of foul diseases that prevail among the poor, will obstinately resist all ordinary measure of the Board of Health until bodily bathing and its resultant habits of cleanliness supplant the present condition of negligence and filth among the lower classes. To induce a slovenly and begrimed laborer's family to bathe regularly is a sure step to the thorough cleansing and neatness of their clothing, apartments and premises.

Mortality and Sanitary Wants in Trades and Classes.—The Board of Health may justly require that the vital statistics of the various great trades and classes of the city's population shall be annually recorded. In the abstracts of mortality from particular diseases, and in the census synopsis of population by occupations and nativity (see abstracts), we begin this duty; but more than this is needed. The hygienic wants of all the industrial classes and the poor are objects of special and constant inquiry and record. And to the attainment of a comprehensive and accurate knowledge of such facts there will need to be special sanitary inspections of trades and of the homes and wants of the poor. An accurate and carefully taken census, planned for hygienic and vital elements of inquiry, is greatly needed. Some admirable elements of this kind entered into the plan of the last State census, especially in relation to the results of intermarriage of cousins.

Hospitals and Hospital Hygiene.—The Board submitted a series of questions to the bureau of vital statistics, and directed the registrar to institute practical inquiries into the existence of insalubrious conditions in certain hospitals. Important evidence has been placed on record, and the leading questions relating to pyæmia and fever-infections in hospitals continue to be examined. A carefully prepared revision of the facts thus far ascertained, and of the principles and progress of sanitary knowledge as applied in hospitals, has been completed. Information in this department of practical hygiene is systematically arranged in the bureau to serve the humane purposes of the Board of Health and the medical profession. The notes on hospital hygiene and the hospitals of the Metropolitan district are already voluminous and important. And upon the close of a national experience and success in the applications of hygiene in the most extensive and munificent hospitals ever created in war, it is fit that this Board of Health should require that hospital hygiene and the results of hospital experience should become subjects of systematic study and permanent record as a branch of vital statistics.

The details of a plan for the systematic recording of hospital statistics and the *results* of medical and surgical care, the effects of locality, construction and ward improvements, distribution, transportation, diet, etc., together with an abstract of notes on hospital hygiene, are ready to be submitted to the Board. In this duty of studying and recording the results of hygienic improvement in hospitals and eleemosynary institutions, every physician will be prompted by the humane spirit and zeal of his profession to lend his aid. To attain the highest possible success, to diminish the cause of local infection, and to reduce the average time of illness and healing to the briefest period and, especially, to increase useful and accurate sanitary knowledge, by which the beneficent designs of all hospitals shall be promoted, and practical application of hygiene and medicine be rendered more available and certain, are among the ends to be accomplished by such inquiries.

Statistics of Sickness and Disease.—Early in summer the Board authorized the bureau of vital statistics to require daily reports from the incorporated dispensaries; also to procure semi-weekly and weekly returns from certain hospitals. We now make a permanent record of such returns. They give facts that have been very useful as received day by day, and which may incite to more comprehensive efforts to make a useful public registration of diseases. The promptitude and heartiness with which all these public institutions have continued to make these returns evinces a spirit that should encourage the Board of Health and the medical profession to seek the gradual adoption of a comprehensive and much needed system of disease registration.

Valuable as the records of death and their causes may be in seeking for the best means of prevention, the statistics of life, of health, of diseases and their associated and dependent conditions, are yet more important. Sanitary science and the healing art alike require that such statistics, founded on accurate and extended observations, should be systematically procured by sanitary officers, from hospitals, dispensaries, and charitable institutions. We embrace this opportunity to express to the Board of Health the high estimation we place upon the value of the voluntary information thus and in various ways rendered by the medical officers of the public institutions.

That it is as practicable as it is needful to collect and permanently record a large amount of trustworthy statistics of disease and hygienic concomitants of sickness, we need not doubt. Hospitals, dispensaries, charities, and penal institutions are ready to aid in this work, and the general practitioners of medicine will ere long lend their voluntary co-operation. Upon this subject I beg leave to refer to the admirable suggestions and example of Dr. Brinsmade, of Troy, New York, who has incited the inauguration of a system for such registration of medical facts. He remarks that "many must enter upon the practice with zeal and perseverance."

It is not a small thing that we found no deadly footfalls of the pestilence in the House of Industry and the Mission Houses the past summer, in the very focus of the epidemic; nor is it a matter of indifference that scarlatina and diphtheria are now most fatal in the vicinity of neglected and foul privies, and that, as winter draws on, we find fifteen, twenty, and even twenty-five per cent. of the inmates of certain unventilated, close-packed tenements so ill as to require nursing or medical care; nor is it unimportant to the poor, nor to the public that pays for pauperized widowhood and orphanage, that there are wards in certain public hospitals among us in which the chances of life to a surgical case are reduced nearly one-half by being placed in them for operation and treatment. The trenchant pen of Florence Nightingale has set forth the necessity there is for such records as will truthfully show how and why human lives are needlessly destroyed, and, in a suggestion of hers to the International Statistical Congress, she justly remarks, concerning all unsystematic and unclassified hospital records and sanitary statistics, that these "observations in their present state bear exactly the same relation to sanitary and medi-

cal science as an indefinite number of astronomical observations, made without concert, and reduced to no common standard, would bear to the progress of astronomy."

The Board of Health required its Bureau of Vital Statistics to be so organized as to meet the first necessities of an efficient sanitary government, and both harmonize with and promote the hygienic and social welfare of the people. Implicitly confiding in the principles on which the science and applications of hygiene are founded, we adopted only such methods as conformed to those principles. A threatening epidemic compelled prompt decisions upon all essential points. The registration of population growth, and the social state—of birth and marriage—having been provided for in official forms that bring desired results, it became the Registrar's duty to rely upon Mr. Bowne's peculiar fitness to have the daily oversight of that growing branch of service, and, by his incessant attention to the requests, the required returns, and the delinquencies of the persons whose duty it is to report births and marriages, insure such accuracy and completeness in details as we require. With the addition of one or two recording clerks, that branch of registration can now be universally applied in the counties of Westchester, Richmond and Queens, the returns from which need to be made to this common centre in New York. The Brooklyn branch of this Bureau, under Dr. Stiles, is already recording birth and marriage returns from the suburban villages of Kings county, and can now assume and enforce the registration in that county. Death, and the causes of death, preventable mortality and disease, together with the accurate study and application of sanitary science in connection with vital statistics, receive the first attention of the Bureau, and in the pages of this report we present a rough outline of these plans and a summary of the first few months' results of them.

The leading purpose and governing plan of the bureau designed first and chiefly to aid the Board of Health in saving life and preventing sickness. Habits of practical familiarity with disease, and of responsibility in the study and care of its preventable sources, led the chief officer of the bureau to adopt concise and speedy methods for procuring needed results, and forbade waste of time on any curious uses of mere columns of numerals; and if, in time, there shall accumulate such masses of numerical results in this department as shall invite the labors of expert mathematical statisticians, an abler hand than ours should guide that work. But

the present necessities of the Board and the people seem to require the homely uses we now make of vital statistics. We undertook this system of vital registration and inquiry, having clearly in mind as the guiding rule in our methods the sound advice which Sir John Herschel long ago gave concerning public inquiries and records, viz: "First, to ask distinct and pertinent questions admitting of short and definite answers. Secondly, to call for exact statements on all principal points. Thirdly, to point out the attendant circumstances which ought to be observed. Fourthly, to secure their transmission to the common centre."

A vast population throbbing with active life in the most important centre of commerce in the world; a population whose physical and social welfare and vigorous development are essential adjutants to the commercial and the moral progress of these metropolitan cities, and through these cities to the chief towns of the continent, is a necessary result of all that the Board of Health has done or should do. The duties that now, in the daily service of the Board, are directly applied to the welfare of the local population and the individual, will not fail to produce beneficial results to other persons, other populations, and in other places, and later times. To preserve the health and augment the value and the length of life by sanitary measures, in this great centre of population and social influence, is an object sufficiently noble, humane and necessary, to inspire any mind that is at all conscious of the high destiny of this metropolis and the State.

Nearly one and a half millions of people already occupy the district over which the State has given the sanitary board jurisdiction pertaining to the health and vital records of the population. And this population, increasing as it does at the rate of nearly seven per cent. yearly, will soon exceed four millions. The sanitary works now commenced should be so definite, so comprehensive, and so thorough, that the future as well as the present populations of these five counties shall experience the full value of them. Severely practical men may sneer at the pretensions of sanitary science; weak and timorous men may hesitate to commit themselves to its principles; and wicked men may turn indifferently from considering that which concerns the health and happiness of millions of their fellow-creatures; but in the great objects which it proposes to itself, in the immense amelioration which it proffers to the physical, social, and, indirectly, to the moral condition of an immense majority of our fellow-beings, it transcends

the importance of all other sciences; and in its beneficent operation seems to embody the spirit and to fulfill the intentions of practical christianity."

To preserve the health and augment the value and length of life by sanitary measures, in this great centre of population and social influence, is an object sufficiently noble and humane to inspire any mind that is at all conscious of the high destiny of this metropolis and the State. Nearly one and a half millions of people already dwell in the district over which the State has given the sanitary board jurisdiction pertaining to the health and vital records of the population. And this population, increasing as it does at the rate of nearly seven per cent. yearly, will soon exceed four millions. The sanitary works now commenced, should be so definite, so comprehensive, and so thorough, that the future as well as the present population of these five counties shall experience the full value of them. Severely practical as the leading daily purpose of this bureau of vital statistics is, we have endeavored to keep in view those future and enduring results which shall make these humble beginnings not less beneficial in after years than in the present.

While we confess that the methods of the bureau were arranged and adopted on the spur of the occasion that required organization and means to reach immediate results, it is now due to the board and the distinguished hygeists and vital statistis with whom the bureau is in correspondence, to state that all of them have cordially advised the continuance and complete development of the methods we have adopted for securing returns, and giving to vital registration wider and more directly practical methods, by which hygienic inquiry and vital registration are combined and rendered reciprocally explanatory and applicable in the daily service of the Board of Health.

In all the work that has been attempted, we have received the cordial and prompt co-operation of deputy registrar Dr. R. Cresson Stiles, in the branch for Brooklyn and Kings county. In all efforts to secure the completeness and any desired improvement in medical returns, the medical profession has cordially responded. And in the active sanitary work of the board, we have witnessed the faith and zeal by which a large number of medical officers under the sanitary superintendent, have successfully undertaken to carry into operation the measure that should control a pestilence. And to each of those medical officers who faithfully

labored thus, the gratitude of the public is due. The record of the nature and results of their labors will be as permanent as the archives of the board.

The scope of this report will not permit the introduction of further details. Several subjects of practical interest to medical readers, and important for reference, are embodied in the subjoined appendix. The special report on cholera, which is here subjoined, is deemed important for the records it contains concerning the events of the epidemic, and the means employed to arrest and control it.

In this report of results in organization, and the first months of service, a foundation stone is humbly laid for a temple, which abler hands and the broader intelligence of later times must build and dedicate to hygiene. The practical knowledge of life and health is of slow growth, for in his social, religious, and physical nature, man develops the perfection of his earthly existence very gradually and by various combinations of means. But the public mind is at last fully aroused to the duty and value of sanitary regulations and vital records. A long and terrible war, that called into the field the largest army in the world, jeopardizing the lives of more than a million of chosen men at once, and through successive years, has been made the grand occasion for proving the value of sanitary forethought and care. The tented field, the thousands upon thousands of ghastly wounds, and the vast hospitals of the army, called forth the resources of hygiene, and so demonstrated the life-saving power of preventive measures, that, in every hamlet in the land, the practical meaning and homely uses of sanitary knowledge have come to be popularly appreciated. And if peace has its victories as well as war, it has, as Florence Nightingale has said, "also its unnecessary losses from disease and death; only the losses of peace are greater than those of war, because they are daily and constant."

The State of New York will not act alone in the duty of sanitary care and vital registration. Other States are now preparing to join in this work with us, and a threatening pestilence renders it desirable that an efficient sanitary organization should be speedily brought into effectual operation in every city and town in our country. And the ultimate results of all this thoughtfulness for human life in the commonwealth are not uncertain; "for it is impossible for any nation, or for any government, to remain indif-

ferent, when, in figures which admit of no denial, the national amount of health and happiness, or disease and suffering, is determined."

E. HARRIS, M. D.,

Reg. of Vital Statistics and Cor. Sec'y M. B. of Health.

APPENDIX

TO

REPORT OF REGISTRAR OF VITAL STATISTICS.

EPIDEMIC CHOLERA IN THE METROPOLITAN SANITARY DISTRICT DURING THE YEAR 1866.

During the first eleven months of the year 1866, there were 24,948 deaths in the city and county of New York, and 6,696 in the city of Brooklyn. In the year 1865 there were 24,843 deaths registered in New York. The records of the several causes of death in these cities in these consecutive years present a single characteristic, which plainly enough points out the fact that cholera was epidemic here during the summer and autumn. Both years have been justly reported unusually healthful in the vicinity of these cities and throughout the State, excepting that there was in 1865, an unusual prevalence of malarial fever in all the paludal districts.

The distinguishing characteristic to which we allude is best appreciated by taking a preliminary view of the records of mortality from cholera and all the diarrhœal diseases in New York city the past thirteen years.

Year.	Cholera and Cholera Morbus.	Diarrhœa, Dysentery, & Cholera Infantum.
1854	2,810	2,592
1855	58	2,484
1856	58	2,302
1857	53	2,179
1858	56	2,521
1859	71	2,124
1860	97	1,788
1861	85	1,896
1862	93	1,935
1863	191	2,550
1864	85	2,488
1865	98	2,738
1866	1,435	3,524

The average number of deaths from the diarrhoeal and choleraic diseases together, in the eleven years between 1854 and 1866 was 2,567. In each year there was, as seen above, a small number of deaths returned as "cholera morbus" and "cholera." The death registers of the city of New York, now in the bureau of vital statistics, exhibit the fact that from their commencement, at the beginning of the present century, there has always been a small and but slightly variable percentage of deaths every year accredited to common cholera morbus.

The occurrence of 1,212 fatal cases of cholera, together with an acknowledged excess of some 2,489 fatal diarrhoeal maladies, over and above the usual proportion of mortality from this class of deaths should be fully explained. And to do this is the design of the following sketch of the epidemic. We also keep in view the fact that a historical record of this kind should, first, give a truthful and succinct narrative of events, and, secondly, point out very clearly the practical lessons of the epidemic.

FIRST CASES OF CHOLERA IN THE DISTRICT.

The arrival of the "Atalanta," with cholera on board, from Havre, in Nov. 1865, and the consecutive arrivals of the "Virginia," the "England," the "Peruvian," and other emigrant vessels with cholera among their passengers, in April and May last, led to a general belief that the Eastern epidemic would soon be planted on our shores. The logic of events in all the former visitations of cholera warrant such popular opinions, however theorists might differ in regard to the means by which this pestilence is spread from country to country.

The sad but instructive experience of the "England," with twelve hundred emigrant passengers shut up with cholera, was a truthful foreshadowing of all that followed in the experience of seventeen other ships, and the quarantining of their emigrant passengers in the subsequent seven months. We need not at this moment recount the details of that experience, for they constitute a body of evidence that will be adduced in another section of this report. But this fact we record as the essential antecedent of all that follows, viz.: that of the eleven hundred and thirty-eight persons who left Liverpool in the steamship "Virginia," thirty-one died of cholera on the passage, and sixty-six perished by the same cause during the first few days of that ship's detention at the New York quarantine anchorage. The "England" had lost two hundred

and fifty passengers and crew by cholera before her arrival at New York on the 20th of April. These two ships, with the "Atalanta," were harbingers of the pestilence, and no record of cholera in this district and on this continent the past season can be complete without some reference to the events that transpired in those and other emigrant ships before the first outbreaks of cholera on our shores. And during every month there arrived many thousand emigrants from German and French ports by ships that had no record of cholera in them, but so clad, bundled and crowded, that no sanitary regulations which did not cleanse and ventilate every person and every garment of the steerage passengers, could with any reason promise that the foul excrement of choleraic diarrhœa would not be almost daily brought into the city, and much less that persons with that painless and unnoticeable flux, would not prevail for days and weeks in many a lodging-house before any method of sanitary inspection would reveal the existence of such diarrhœa, or discover the first case of cholera in its malignant stage.

Immediately after the arrival of the ship "Virginia," certain sudden deaths were reported to the Board of Health as being caused by cholera; but the immediate inquiries then made on the premises, and with the dead bodies, and all who dwelt with the deceased, in our presence, there was found no evidence or reasonable suspicion of a single case of this pestilence in the city of New York until the first day of May. During the month of April there were but 124 deaths from diarrhœal diseases, and those were traced home to ordinary causes. The circumstances and places of those deaths excluded all probability of any dependence upon cholera.

The Board of Health, early in May, encouraged the organization of a complete system of medical advice and relief, adapted to the possible exigencies of a great epidemic; but, happily, the approaches of the pestilence were so gradual and so closely watched that its ravages were limited to well-known cholera fields. A description of that preparatory scheme, in which the medical profession and its chief charitable institutions—the dispensaries—heartily co-operated, is given in another place.

Death of Mrs. Jenkins, in Ninety-third Street, Third Avenue.—At ten A. M., the first day of May, a woman, who had been in collapse since the previous evening, died in an old rookery in an open lot, on Ninety-third street, east of Third avenue. An aged physi-

cian, who had seen much of cholera in all its visitations since 1832, was called in at 5 P. M., about the third hour from attack, and after due deliberation pronounced the sickness to be cholera. The record of the case, which we obtained from him before inspecting the corpse, and from Dr. W. V. White, who also attended the patient, and reported the case to the Board, left no doubt that from first to last, in her twenty-one hours of illness, their patient had presented all the symptoms and phenomena that characterize malignant cholera. The inspection and care of the premises, and the taking of testimony concerning all that related to the deceased and the five families that lived in the same house, occupied the night. All that was seen and all the testimony then obtained conduced to the opinion that Mrs. Jenkins died of cholera, but that possibly it might have been produced by the septic effluvium of a mass of privy manure, which some weeks previously had been mixed with soil and garbage refuse ; and, during the week previous to her illness, had under her superintendence, and partly by her own hands, been spread upon her garden. Indeed it was then, and is still, deemed highly probable that the cause of that sudden and fatal illness was somehow connected with that mass of privy soil which was the accumulation from that tenant population and the trampers of the open area about them the previous four months. But the evidence simply amounted to this, that Mrs. J., as mistress of the premises, had, by her personal superintendence of the distribution of that manure, been more directly exposed to its effluvium than any other one of the thirty-five inhabitants of her house, and that, as they all had daily used a new privy several weeks, there was no reason to suppose that any one except Mrs. J. and her hired man had been directly exposed to the old privy pit. In every other particular all other persons on the premises were more exposed to the common causes of sickness in that dilapidated house than the mistress of it, who died. Hers were the best apartments, upon the second floor, and with the best supply of fresh air, which that part of the house received. To arrest the multiplication of such deaths, whatever the local cause, and to destroy any infective power that might, if this woman died of Asiatic cholera, pertain to "rice-water" discharges, which were voided in enormous quantity and cast upon the bedding, the floors, and the grounds about the house, the saturated stuff of the sick-room was burned, and the entire premises were covered with a mixture of crude carbolic acid and chloride of iron, a quantity of which was on storage near by.

The case was not known to be of exotic origin, and it seemed barely possible that it had been produced by strictly local causes; but, as we then reported to the Board and the sanitary superintendent, the question, "Is it sporadic and uninfectious," is not to decide the duty of the moment; but, rather, "May it not be a case that possesses the infective and epidemic quality of Asiatic cholera?" The Board acted in accordance with this view. The immediate removal of the people from the premises to the barracks, and medical visitation of all who had been upon the premises the previous two days, helped to prevent the occurrence of events that would demonstrate the correctness of the hypothesis that this was malignant cholera. None of the forty or fifty persons thus under hygienic observation and care exhibited any symptoms of cholera, except a nursing infant of six months, which the deceased mother had left. That infant suddenly died from an unascertained, but ominous cause, the third day after the decease of its mother.

The final summing up of all evidence in the Ninety-third street case, including a careful post mortem-examination, which exhibited no trace of disease, except the "rice water" fluid in the bowels, added to the probabilities that it was malignant cholera. But how it chanced that an industrious and temperate housewife, residing on the hill-top that overlooks the southern end of Ward's Island, became the first victim, may never be so explained as to remove just doubts of its exotic origin. Yet this should be stated, namely, that there were as strong probabilities that the grounds and privy pertaining to that tenant-house would be contaminated by recently landed emigrants, as that the lodging houses in the lower wards would become infected. Again, that in the beginning of the previous winter twenty-seven persons with cholera died and were buried on Ward's Island, within one mile from the spot where Mrs. Jenkins died.

The Second Case of Cholera.—In a crowded tenant-house at 115 Mulberry street, May 2d, a woman suddenly fell ill with symptoms of cholera early in the morning. She was seen during the day and evening by experienced physicians, who considered the case to be cholera in partial collapse. The "rice water" excrement was copious, and the physical aspects resembled those of cholera. Constant sanitary care was given, and on the second day the woman was restored. The relations of that case to any exotic cause, if there was one, remained undiscovered. Zine and carbolic acid disinfectants were freely employed in the apartment

and in the common privy. There was, and still continues to be, more probability that this was malignant cholera than in the case previously related. They both had the good effect to induce very great vigilance in the medical practice of the city, and in the sanitary service of the Board of Health.

On the 29th and 30th of May, the emigrant steamships "Peruvian" and "Union" arrived at Quarantine with nearly 1,200 steerage passengers, and having lost 50 from cholera on the passage from Liverpool. Immediately upon coming to anchor, the pestilence seemed to acquire fresh energy, probably from arrest of ventilation. In the course of a few days there perished 104 of the miserable beings, who were thus shut up with a deadly infection at the New York Quarantine. In the two cities there was no increase in fatal diarrhœas, and we were unable to find any district in which there was a discoverable tendency to diarrhœas.

The Third Case of Cholera.—Sunday, June 3d, a feeble gentleman, residing in his own well-kept house, at No. 303 Broome street, was detained from church by discomfort and lassitude, for which he took his accustomed "bilious pill." Painless diarrhœa, which continued four or five hours, terminated in the collapse of cholera early that evening. Death ensued before noon next day, after less than 24 hours' illness. Full particulars of the case reached us from a friend of the family at 2 P. M., Tuesday. The medical attendants had, from motives of policy, rendered a certificate of death from "debility," but the family physician furnished a full record of the case, and expressed his belief that it was simply and purely Asiatic cholera.

The deceased was a lawyer, and divided his business hours between his basement office in Broome street, and the office of Titles and Registry, in the City Hall Park. His dwelling was a model of neatness, though in the midst of the foreign population. The source of his disease remains undiscovered. But we need not state that his home office, where he spent much time daily, was damp and unventilated.

All the phenomena and circumstances of malignant cholera were too well marked in this case to permit much doubt concerning it. The same active measures were pursued as in the previous cases. But it should be mentioned that two hours before the Board of Health obtained its first information of this case, a sister-in-law of the deceased had gathered the saturated clothing, and washed the

whole without boiling. This she did on Tuesday morning, in the rear court yard.

Fourth Case.—The fearless and strong woman who washed the soiled clothing and bedding of her brother-in-law, whose case we have just related, was dressing for the funeral about noon, on Wednesday, the 6th of June, and in less than thirty hours subsequent to her dutiful washing of the soiled clothing, was seized with painless and uncontrollable diarrhœa, and in a few hours sank passively into collapse and death. We at once examined the soiled clothing, and had it immediately immersed in a dilute solution of permanganate of potassa, until it could be boiled in kettles. The privies and house drains were flooded with solutions of sulphate of iron, and lime was abundantly strewed about where needed. The next evening one of the family servants was seized with choleraic symptoms, and was at once taken to the nearest hospital. She recovered. We have not recorded this as a case of cholera, because we have not received any medical testimony that renders it certain she had cholera.

Fifth Case.—In the morning of June 8th, a young woman, yet feeble from her recent child-birth, and while laboring at her household duties, was attacked with diarrhœa, that soon terminated in partial collapse. She had the characteristic excreta and cramps of cholera. She lived in the midst of foreigners, and in a row of tenement houses that had only the common surface privies or pits. This locality was in West Twentieth street, fully two miles distant from any of the places we have already mentioned.

Sixth Case.—On Saturday evening, the 9th of June, a temperate laboring man, in middle life, was seized with choleraic symptoms while at his work by the water-side, East river, and at 10 P. M. was found by his family physician in partial collapse, and with well-marked signs of cholera, at his home in Hester street. The premises were thoroughly disinfected on Sunday and Monday. The nature of this case admits of doubts, but the question of preventive care did not. And had this class of cases ceased to increase, the question of their identity with true cholera, or of their independence of it, might be discussed indefinitely.

Seventh Case.—On the morning of June 11th, a servant woman, who had spent the previous afternoon and evening in the vicinity of Pitt and Willett streets, was seized with symptoms of cholera morbus, but which, the subsequent day, took on the chief characteristics of malignant cholera. She died at daybreak the 13th.

The house and the block in which she resided are among the best models of neatness and comfort in the city. No local cause of such disease existed there. It was the first block north of West Thirty-fourth street, between Fifth and Sixth avenues. Dr. S. C. Foster, the family physician, promptly reported the illness and furnished ample proof that it was cholera. We saw the patient with him and could not doubt the diagnosis. The excreta of the patient were destroyed by disinfectants. No other case has occurred in that region.

Eighth Case.—An Irishman at 51 Cherry street, two doors north from Roosevelt, was seized with cholera before daybreak, June 13th; at 2 p. m. he was in collapse, and died at 7 p. m. Before his burial, next day, cases of choleraic diarrhœa and one case of cholera were discovered in that locality, and there soon followed several deaths in that and the adjacent streets from what was called cholera morbus. Every family in five of the blocks of crowded tenements in that locality was immediately visited. Thirty cases of diarrhœa were found in addition to what we have just mentioned. That section of the city (the Fourth ward), and the region next to be mentioned, (that of Pitt and Willett streets) are always thronged with the most recently arrived immigrants from Europe. The great emigrant lodging-houses are in those districts.

Ninth Case.—At sunrise, June 13th, a country farmer arrived by steamboat from his home in the highlands of Troy, N. Y. He tarried to breakfast at an eating-house in the vicinity of Greenwich and Liberty streets, and after an hour or two he became a guest at the house of a relative in Waverley place. He had every needed comfort and was in a healthful neighborhood. At 9 a. m., on the 13th, he became suddenly ill with a painless, copious and characteristic diarrhœa. At noon he was in collapse, with all the phenomena of cholera, and at 7 p. m. he died. If he inhaled the cholera poison while tarrying for breakfast or while using a privy on the tramping ground of recent immigrants in lower Greenwich and Washington streets, he but added his testimony to the fact that persons coming freshly into an atmosphere contaminated with cholera are more liable to be fatally affected by it than are the residents of the locality.

These initial events in the history of the epidemic have been thus particularized in order to set forth at once the first facts and the first difficulties that are encountered in the sanitary study and care of epidemic cholera. The success of sanitary measures, as

well as the requirements of sanitary knowledge, made it an imperative duty to look well to the circumstantial history of the first cases of cholera and the maladies that are allied with that exotic scourge.

On the 15th of June, the Board of Health specially ordered its entire corps of sanitary inspectors to be held in readiness for every emergency of the epidemic, the presence of which was becoming daily more evident. And the order which was issued on that day to establish depots for disinfectants, and to organize sufficient special force as a "disinfecting corps," was one of the most important decisions which the Board made in regard to preventive and arrestive measures against cholera.

In the week ending June 16th, there were six deaths from cholera. The subsequent week there were but four returned, and the next, being the last week in June, there was but one death attributed to this cause. Fatal diarrhœa of infants had rapidly increased during those three weeks; 6, 13 and 40 were the numbers standing against "cholera infantum" in those weeks; while other diarrhœal diseases, mostly in adults, gave 30, 34 and 85 as their count of deaths in those weeks respectively. In the first three weeks of July cholera made no great demonstrations, but it became rooted in many places that would not fail to nurture it. Subjoined is an abstract of mortality returns of this class:

Mortality from Cholera and Diarrheal diseases, in the months of June, July, August, September, October and November, 1866.

DISEASES.	WEEK ENDING												
	JUNE.					JULY.					AUGUST.		
	2.	9.	16.	23.	30.	7.	14.	21.	28.	4.	11.	18.	25.
Cholera .....	.....	2	6	4	1	3	11	11	48	239	258	145	114
Cholera infantum.....	.....	1	6	13	40	61	172	278	176	144	133	108	122
Other diarrhoeal diseases	12	15	23	20	38	40	64	131	103	108	122	113	104
Total mortality from all causes..	366	393	383	434	523	493	827	1,362	771	946	959	748	714

Mortality from Cholera and Diarrheal diseases, &c.—Continued.

DISEASES.	WEEK ENDING													
	SEPTEMBER.						OCTOBER.						NOVEMBER.	
	1.	8.	15.	22.	29.	6.	13.	20.	27.	3.	10.	17.	24.	
Cholera	50	50	67	54	38	36	12	5	3	5	.....	1	1
Cholera infantum	79	69	51	55	42	27	20	18	13	8	1	3	1	
Other diarrheal diseases	89	85	83	76	44	45	35	34	27	26	17	8	15	
Total mortality from all causes....	647	656	624	560	487	419	428	475	409	389	391	372	397	

In our retrospection of the epidemic, this view, which could not be taken in anticipation, except revealed by ascertained laws of cholera epidemics, helps the reader of these records to appreciate the fact that everywhere appears, in the narrative as in the statistics, that cholera was accompanied by an excessive quantity of fatal diarrhœas that, in the acceptation of physicians, was only capable of being designated by the common names of intestinal fluxes. The colored diagram on the opposite page shows the facts relating to this subject in a still more instructive light. And by referring to the report of deputy registrar, Dr. R. C. Stiles, in this volume the reader will perceive that death's doings in Brooklyn, during the epidemic period had close resemblance to the course of mortality in New York. The cholera became rooted and virulent in the districts which were most afflicted by the common diarrhœal maladies. They pursued their fatal courses together both as regards time and place, though with this exception, namely, that in the four weeks preceding the truly epidemic period of cholera, also in the eight succeeding the termination of that period, these diarrhœal complaints, though apparently of the most common character, swept large numbers of puny infants and enfeebled persons into the grave.

This coincident course of cholera and the common diarrhœas is, doubtless, susceptible of a rational interpretation, but we need not ask for that interpretation just here. The facts which we here attempt to represent by symbols of quantity, numbers, and geometrical proportions, need to be clearly appreciated in relation to the epidemic.

Geographical Distribution of the first twenty-five fatal cases of Cholera.—Previous to the 8th day of July, twenty-one cases of well marked cholera in the city of New York had terminated fatally. They occurred in seventeen different streets, in eighteen different blocks, and in nineteen different houses. There were two houses, in each of which a second fatal case occurred within three days of the first case there. There were two groups, each having three fatal cases, within a common radius of two hundred yards.

The two groups of two cases in a single family and domicile were at 303 Broome street, about one hundred yards east of the Bowery, and at 19 Mulberry street, eighty yards north of Chat-ham street. And the two geographical groups of three hundred deaths, with but a few days interval, were: (a) in Cherry and Oak

streets near Roosevelt street; (b) in Mulberry and Baxter streets, near Chatham street. The residence of the twenty-one fatal cases, together with ten other reported, but not fatal cases of cholera, or, thirteen of the deaths and ten non-fatal cases, were widely scattered over the city. None of the twenty-one fatal, or of the ten non-fatal cases, were discovered to have been in any way directly exposed to persons or things, from Quarantine or from the emigrant landing or depot. Yet every one resided in, or frequented, localities that were daily traversed by freshly landed immigrants. This fact must not here be regarded as establishing any dependence of the cholera upon such near presence of immigrants, their foul beds and clothing, or their choleraic diarrhœas, for, notwithstanding the fact that these good and sufficient causes of infection were both suspected and fully anticipated, nothing has been, or is ever likely to be, positively known regarding their relation to the outbreaks of cholera in New York. The city is too densely crowded and the mixing of the population is too promiscuous and utterly unnoticed and unregistered to warrant any attempt to trace the connection of events and acts that may have occurred daily in the places where the cholera poison was received into the system.

In Brooklyn there was one well pronounced and fatal case of cholera in the first week in July. It occurred in the central part of the twelfth ward and in the very focus of the epidemic that ravaged that ward the following four weeks. It may not have been the first case of cholera in that ward or the first in Kings county, but it was the first unequivocal case officially reported. It occurred in the midst of a class of inhabitants who are more exclusively foreign than can be found elsewhere in that city, and among whose dwellings and privies in unenclosed lots, emigrants and trampers roam daily at will. Yet it must be mentioned here, that neither that nor any of the subsequent cases in Brooklyn were traced to a sick immigrant or to anything pertaining to the recent immigrants in that city. It is needless to speculate concerning the introduction of cholera in either of these cities. We have stated precisely all that is known upon the subject.

The foregoing record presents the fact that the first 25 fatal cases of cholera, and the first 10 or 12 cases that did not terminate fatally, were widely distributed, and that, in a majority of instances, there was not any discoverable or suspected relation between them individually, though they all seemed to have been

derived from personal exposure in the emigrant districts near the river-sides.

Progress and Phenomena of the Epidemic.—The scrutinizing inquiries that were from hour to hour, and day by day, made concerning the local and individual circumstances of the deaths by diarrhoeal diseases, served at once to increase the probability that most of the cases of cholera would daily be discovered, and likewise to unfold the unhygienic condition and perils of the localities that most invited the epidemic.

July 8th, there were three fatal cases of cholera in characteristic cholera fields more than one-half mile remote from each other. One was in Cherry street, near Roosevelt; one in Charlton, near Varick; and one in Delancey, near Pitt street. And on the 9th, 10th and 11th days of July, there were four fatal cases, one of them, only, in a new field. There were at least two non-fatal cases at the same time, with one additional centre, namely in the field west of the Central Park. July 15th, there were four fatal cases in localities previously marked, and on the 18th, there were two deaths from cholera, in a tenant-house, 120 feet distant from a tenement in which a fatal case had occurred six days previously, in Chrystie street. On the same day, the first fatal case occurred among the soldiers on Governor's Island, which being in the first ward of the city, was immediately reported to the Board of Health. The same day a woman was seized with cholera in the State's Emigrant Refuge, Ward's Island, and was reported fatal to us the next day. There were two fatal and two non-fatal cases in New York, on the 19th of July. And that day we received intelligence of several deaths of cholera in the military rendezvous on Hart's Island, and among those fatal cases was that of the lamented Dr. J. Theodore Calhoun, Surgeon U. S. Army, in charge of the medical service at that depot of recruits. Cholera had gained access there a week previously, from Governor's Island, as we now have good reason to believe.

Next morning, July 20th, a telegram from Savannah brought intelligence of the outbreak of cholera on board the steamship "*San Salvador*," on the passage from New York to that city. The ship was then in the Savannah river, abreast of Tybee Island, and the soldier passengers were being landed on that sand key. A fatal case of cholera had occurred on board, but a few hours subsequent to the departure of the ship from New York. Three others were suffering the same malady when they reached Tybee.

The relation of that outbreak of the epidemic to Governor's Island, and the lower wards of New York, seemed to be important. The following note upon the subject was courteously forwarded by General Butterfield:

"HEADQUARTERS GENERAL RECRUITING SERVICE,
 "UNITED STATES ARMY, 71 BROADWAY,
 "NEW YORK CITY, *July 20, 1866.* }

"ELISHA HARRIS, M. D., *Corresponding Sec'y and Reg. M. B. H.*

"Sir: I am directed by General Butterfield to acknowledge the receipt of your communication of July 20th, and to state in reply to the inquiries therein made:

"1st. The 'San Salvador' left the port of New York July 14, Saturday last; I believe the hour was 3 P. M.

"2d. The recruits left the rendezvous at Fort Columbus, a few hours prior to the departure of the steamer.

"The General directs me further to say in reply to your inquiries, that an inspection of the ship was made, by his orders, before the troops were sent on board, and a satisfactory report made as to the condition, &c., of the ship.

"That application was made for a medical officer to accompany the ship.

"I am, sir, very respectfully,

"Your obd't serv't,

(Signed.)

"W. J. GENTRY,

"*Brvt Lieut. Col. and A. A. A' Gen'l.*"

About the same date, namely July 16, another military transport took its departure for the mouth of the Mississippi and Galveston, with recruited soldiers from the Governor's Island rendezvous; and among those recruits cholera made its outbreak in the same manner, and with the same results, as on board the San Salvador. This was the ship by which cholera made its way to New Orleans, and this is the company of soldiers that conveyed cholera to New Orleans. The particulars are given in full in our special report upon the progress of cholera in the States.

The foregoing incidents constitute a part of the proof that the cholera and the chronic diarrhœa that prevailed at the military rendezvous on Governor's Island, and in other sections of the First ward in New York, threatened, by its deadly infectiousness, to become the chief source of an epidemic that would, with the facilities of steam transportation, within a few weeks visit the chief towns upon the lines of steam transportation. Numerous

facts came to our knowledge in subsequent weeks, which proved that this opinion, that the cholera in our midst, though so subtle and mild behaved as to disarm popular apprehension, was a malignant infection, and that in its own victims when journeying, it would, regardless of theoretical waves of an epidemic atmosphere, leap half the width of the continent from New York and from New Orleans at once with the same rapidity that railway trains and Mississippi steamboats travel on their swiftest trips.

To know and to take the sanitary control of every house that cholera entered, was justly regarded an imperative duty by the Board of Health and its medical officers. The method of sanitary care of the premises, the excreta and soiled clothing of the victims of cholera, together with the aid of the police telegraph, which the very first case had called into operation, were now, at the sudden uprising of the epidemic phenomena of the pestilence, in full force. The telegraph, with its nearly fifty stations communicating with the central office in Mulberry street—the sanitary headquarters—the precinct officers, and the two thousand policemen, gave such facilities for constant, and such immediate reporting from, and instant action on, every cholera field in the two cities, and even in the suburban counties, as probably was never the fortune of any other sanitary government to enjoy. The practical relations of these facilities for the transmission of information and orders, will appear in a subsequent section of this report.

In the first twenty days of July cholera destroyed thirty-six lives in the city of New York, besides one, at least, on Governor's island, and one on Ward's island. During the same period in Brooklyn there were thirty-two deaths. And in the four successive weeks of that month the returns of fatal cases footed up about equally in the two cities, including their public institutions respectively. It is now known that one hundred and ten fatal cases occurred in New York and its institutions in those four weeks. Brooklyn returns a little less than one hundred for the same period. And in New York there were many reports by physicians and notifications by police telegraph of cases that subsequently recovered. According to the official decisions of the sanitary superintendent and inspectors, only twenty-two of that number had well marked cholera. But all the localities, together with the excreta of the sick, were treated by disinfectants.

In our report upon the mortuary record, and sanitary experi-
[Assem. No. 241.]

ence of the third quarter of the year, will be found an important statement regarding the concurrent events of the epidemic period. The excessive heat of the greater part of July, by direct as well as indirect effects, produced an alarming mortality among the children; and, as was shown, day by day and week by week, upon blank maps of the city, there was an increasing number of well defined diarrhœal fields in which death gathered its harvests at the rate of seventeen a day the first week, thirty-seven a day the second, sixty-five a day the third, and fifty a day the fourth week of July. In Brooklyn we found the same ratio of diarrhœal deaths on population and on total mortality, and likewise bearing the same proportionate relations to cholera as in New York.

DESCRIPTION AND LIMITS OF THE DIARRHŒAL FIELDS.

The very first fact to be stated concerning those fields is this, that they were identically the same as to locality and sanitary character as those described by a voluntary corps of medical inspectors in a survey of the city two years ago, when there was cholera on the continent. The second fact is, that there was but little mortality from diarrhœal maladies in any district of New York not included in the "diarrhœal fields." The next fact to be noticed is that crowded and filthy dwellings, mostly tenant houses of the poorer classes; filthy streets, gutters and courts, obstructed and faulty house and privy sewerage, and a foul condition of privies, characterized the greater portion of every one of these fields. Our personal visits in each of them, and our review of them now with an accurate map of them, with the place of every fatal case of diarrhœal disease and cholera marked thereon, now before us, warrant the assertion that these were essential and invariable characteristics of these fields.

The next fact to be mentioned is, that there were some other, but not invariable, characteristics that have a recognized importance. The most prominent of these is the coincidence of the limits of the diarrhœal field and the beds of former swamp-lands, stream-beds and natural basins that are, to this day, undrained by anything but surface sewers. But it is also noticeable that this class of diarrhœal fields, the worst by far of any in the city, are generally, though not by any means exclusively, the localities where tenant-houses and sanitary neglect abound.

Cholera in the Diarrhœal Fields.—About four-fifths of the cholera cases occurring from May 1st to July 21st, were found in

dwellings situated within the diarrhœal fields. And we find that cholera did not become persistent or frequently recurrent, week after week, in any locality of the cities proper that was not fully included in one of the "diarrhœal fields." But we must not fail to notice the fact that there were some very fatal and enduring fields where common fluxes gave a fearful harvest of deaths, in which cholera did not prevail. The evidence upon this and some other important points in the epidemic history will be presented to the Board at a future time. We need only refer to the experience of the house of industry and the mission houses in the sixth and the fourth wards, as narrated on a subsequent page, to prove that several factors or elements of insalubrity are required to make and perpetuate one of these fields of filth disease. For, in the very midst of the most fatal and most persistent diarrhœal field in the city, those clean and well kept missions, with crowded populations of poor, but well fed and well washed children, escaped altogether from any visitation of fatal cholera or diarrhœa of any kind. The subjoined notes upon the diarrhœal and cholera fields, as studied in July, are quoted from statements which were submitted to the Board of Health by the registrar at that time.

Under date of July 10th the following facts were stated:

"Turning to the appended tables of zymotic diseases, we notice that the one hundred and twelve fatal diarrhœal cases occurred mainly in the fourth (4 cases), fifth (5), sixth (4), seventh, (6) eleventh (12), thirteenth (6), fourteenth (8), sixteenth (5), and seventeenth (16) wards. But a glance at the accompanying diagram of the city's diarrhœal districts the past week will convince that the causes of these fatal fluxes are concentrated in well-defined localities in these wards; and from the accompanying list of these dead and the houses where they died, we learn how largely the localizing and exciting causes of this class of diseases were operating in the worst of the tenant house blocks.

"Diarrhœal diseases absorbed nearly all the zymotic causes of death last week, and though the excessive heat, in some cases, seemed to insure the fatality of the flux from the bowels, the fact is every day confirmed that local impurities and special conditions of ill health in the dwellings and families of the poor are mainly concerned in these excesses in the fatal diarrhœas and the infantile mortality, as tabulated for the Board of Health. This conclusion is derived from an attentive examination of the facts connected

with the individual deaths, but it is specially illustrated in the diarrhœal diagrams the past two weeks.

"The mortuary returns from Brooklyn, show that the same causes which have swelled the New York death-rates, in particular diseases and particular localities, have operated with great fatality in that city. Diarrhœal diseases killed fifty-one of the one hundred and sixty-nine persons who died in that city, and the ratio of deaths from zymotic causes was thirty-six per centum upon the total, while in New York this ratio was thirty-four. And looking for the localities of this increase, we principally note the sixteenth ward, which abounds with localizing and personal causes of disease; the fifth ward, by the navy yard, and the Sixth and twelfth, in the south ferry district."

July 17th, the following statement was submitted :

"Zymotic causes of death were rife in the tenant-house and uncleanly districts. The tabulation by wards shows that it was in the first, fourth, fifth, sixth, thirteenth, fourteenth and seventeenth, that the ferments were most active; and as the effect of these poisons is chiefly manifested by flux from the bowels, a weekly chart of the diarrhœal districts, with accompanying records of the domiciles where such deaths occurred, as now prepared by this bureau, maps out at once the filthiest and most crowded tenant-houses of the poor. Though these diarrhœal and choleraic fields have slightly enlarged their limits during the last two weeks, and have now snatched two persons from the fifteenth ward, and would, if neglected, overleap all boundaries, we yet see nine-tenths of the face of the city's map untouched by the lines of these fatal fields of foul places and foul effluvia.

"The tables which deputy registrar Dr. Stiles to-day submits from Brooklyn, teach the same lesson as his records of the previous week. The fearful mortality in the twelfth, sixteenth and fifth wards of that city equals the worst in New York. The nine deaths from cholera in Brooklyn, and the eleven from the same cause in New York, at once seem to prove that a source of peril exists, which every family and citizen should aid in averting, and that the vigilant measures of the Board of Health against this exotic pestilence are blessed by Providence. I refer to this subject because we have ample evidence that the foul breath of the ferments and filth that most increase the death-rate and prepare crowded neighborhoods for sudden outbreaks of cholera, have become rank and fatal in those neighborhoods, and if the presen

high temperature continues the families in every dwelling, must second the requests and efforts of the Board of Health, or suffer the destructive effects of an atmosphere infected in consequence of local and domestic uncleanness in the crowded districts.

"The fatal effects of the excessive heat are noted in the records now submitted. Besides the 33 cases of fatal sunstroke, about 20 other deaths are justly attributed to the direct effects of heat. A note upon the meteorological records of the week is appended to the consolidated report. Since this report was closed (Saturday), the peculiar effects of the excessive temperature continue to increase; yet, while this heat is overpowering to the nervous system, and destroying life in a certain number of persons daily, the chief influence against life and health lies in those forces of natural chemistry which it arouses to intense activity in breeding ferments and changing local filth to putrid infection. And to such putridity we know that the high rate of diarrhœal deaths is mainly owing. When the chief medical officer of the British General Board of Health undertook his warfare upon the local causes of diarrhœa and cholera, he presented convincing evidence to the Board that "in the districts which suffer the high diarrhœal death-rates, the population breathes or drinks a large amount of putrefying refuse, and that as 'wine gets into the head,' so these agents get into the bowels, and there, as their universal result, produce diarrhœa—simple diarrhœa, in the absence of specific infections—specific diarrhœa when the ferments of cholera or typhoid are in operation.

"It is worthy of note that the present heated term exceeds any similar period for many years, and that the excessive mean temperature of 83 degrees Fahrenheit, has been accompanied by a degree of dryness that has averted a fatality that would otherwise have been unprecedented as regards sunstroke.

"That there need be no public anxiety, except that all should strive to promote local and civic cleansing and disinfection, is sufficiently evident; but the testimony of our records shows that the hour for universal cleanliness and sanitary care has come.

"The highest temperature was reached on Monday and Friday last week, the mean heat of those two days being 92 degrees Fahrenheit. The average of humidity, saturation being as 100, for the entire week was $40\frac{3}{4}$. The maximum of humidity in the nine days past was noticed this morning at 57. The maximum heat of

these nine days was reached yesterday, east side of Essex market, 101 degrees Fahrenheit, at 3 P. M."

On the 24th of July, these facts were stated.

The accompanying map of the city, delineating the houses, streets and districts, within which there occurred four hundred and fifty-three fatal cases of diarrhœal diseases, will present at one glance the chief localities in which the excessive mortality from all causes occurred. These diarrhœal fields are literally the fields of death. They embrace districts in which dwell less than one-fifth of the total population of our city, but within which nearly one-half of the thirteen hundred and sixty-two deaths occurred.

The Epidemic "Explosion."—On the 21st day of July there were thirteen deaths from cholera, of unmistakable character, in New York, including one on Blackwell's Island—the first fatal case there. There were eleven new cases and several deaths in Brooklyn, the previous day. The epidemic was now declared to be present, not only in the cities, but upon Blackwell's Island, Ward's Island, Hart's Island, in Bellevue hospital, and the Kings county penitentiary. The course of the epidemic in the public institutions under the commissioners of public charities, on Blackwell's Island and upon Ward's Island, as well as the course it pursued among the soldiers at the military rendezvous on Hart's David's and Governor's islands, seems worthy of separate descriptions. Hence, we have given separate sketches of the epidemic as it prevailed, and attached them to this report as appended statements.

Prof. Austin Flint, the distinguished medical teacher, had diagnosed and ordered the treatment of a case of cholera in the charity hospital on Blackwell's Island, as early as July 9th. The patient recovered. The second case on that island occurred in the same hospital on the 20th, and died on the 21st. The succeeding day there was a third case in the same building, and in the work-house there was a case—the first one in that institution; and, during the month of July there were one hundred and eighteen well-pronounced cases of cholera, and forty deaths from it; one hundred and eight of these cases, and thirty seven of the forty deaths, occurred the last six days. The subjoined abstract shows the course of the epidemic on that island the first twenty days of August:

Course of Cholera on Blackwell's Island the First Twenty Days of August.

	New cases.	Deaths.
August 1.....	29	15
2.....	45	30
3.....	39	16
4.....	36	23
5.....	37	27
6.....	17	20
7.....	16	19
8.....	10	17
9.....	7	14
10.....	10	6
11.....	9	14
12.....	9	9
13.....	8	5
14.....	11	9
15.....	10	8
16.....	10	5
17.....	6	3
18.....	4	10
19.....	7	5
20.....	9	2

The various circumstances connected with the course of the epidemic on Blackwell's Island have been recorded with such conscientious care, particularly by Dr. Yale, in his notes, that we prefer to refer the Board of Health to them, as appended to our present report, rather than undertake to enter more largely into the details of the visitation in those penal and charitable institutions. We may, hereafter, refer to the experience there, but accept Dr. Yale's notes as a full and truthful record. We have examined all the testimony he adduces, and find that it agrees not only with our official notes on the events, but with the testimony of the medical gentlemen who were associated with Dr. Yale in the service of the institutions.

The facts connected with the outbreak and sudden epidemic of cholera in the Kings county penitentiary, and in the Raymond street jail, Brooklyn, are replete with useful instruction. And in referring to the reports upon those institutions by Drs. Conkling, Zabriskie, and Stiles, (see pages 31-40 in this volume), we need only call attention to the following facts :

PROGRESS OF THE EPIDEMIC IN THE METROPOLITAN DISTRICT IN
AUGUST.

Previous to August 1st, there had been eighty-seven fatal cases of cholera in New York, and one hundred and twelve in Brooklyn and Kings county. July 31st, there came full proof of the epidemic "explosion," which had for six weeks been feared and anticipated. No less than thirty-seven deaths from cholera occurred that day, and fifteen other cases were recorded that subsequently recovered. Ward's Island gave thirteen of the deaths, Blackwell's Island eleven, and the city gave thirteen. The twenty-eight cases, fifteen fatal and thirteen not fatal, that went upon the record of cases in city dwellings that day, were distributed in eleven localities, in most of which there had been one or more cases of cholera previously, and the two most fatal spots were those which were soon so fiercely ravaged in Yorkville, half a mile south of where Mrs. Jenkins died in May, and in a shanty village of "squatters" on the rocky ridge west of the Central Park and between Sixty-fourth and Eightieth streets. Both these localities are among the highest and most airy sections of the city; and in the latter, which is wholly exposed to the freest sweep of fresh air from the Central Park on the one side, and the Hudson river on the other, the epidemic was more fatal and more persistent, than in any other cholera field within the limits of the Metropolitan district, a low section of the Fourth and Sixth wards alone excepted.

During the first two weeks in August, cholera reached its acme of fatality and its widest distribution in the two cities and the suburban towns. In the week ending August 4th, we registered two hundred and thirty-nine deaths from cholera, one hundred and ninety-five of which were in the institutions on the East river islands. In Brooklyn and Kings county we registered that week seventy-two fatal cases. But the acme of the epidemic was not reached until the end of the first week in August. In the seven days ending August 10th, we registered three hundred and sixty-six fatal cases in the two cities, and of that mortality, one hundred and twenty-six cholera deaths occurred on Blackwell's Island, and thirty-seven others were returned from Ward's Island, where there had been, in the preceding seven days, not less than seventy fatal cases.

Among the grave-diggers and burial parties in "Potter's Field," on the southern extremity of Ward's Island, cholera made its appearance at the very outbreak of the epidemic in the Island

institutions. Though our first official notice was received the 4th of August, there is much reason for the opinion that a choleraic diarrhoea prevailed to some extent among those persons at a period antecedent to the "epidemic explosion" in the work-house (on Blackwell's Island), from whence they were, from day to day, detailed in squads and sent in boats up to that unpleasant and very necessary duty in the field. Most of the cholera dead of New York, subsequent to July 1st, were interred in the trenches or in separate graves in that burial-place of the poor, by the Commissioners of Public Charities. We would here refer to Dr. Yale's report of cholera on Blackwell's Island, for all the facts that are fully proved concerning the grave-diggers in Potter's Field, and their share in the epidemic (see appended statements).

By the well-marked cases of cholera that occurred in Charity hospital, Blackwell's Island, July 9th, we fix the locality and date of the first noticeable manifestation of the epidemic, and as the next case of cholera, though eleven days subsequent to the first one, or nearly a week from that patient's recovery, was found on the same premises as the first, there is some ground of suspicion that if any infective cause of the epidemic was conveyed to the island early in July, it may have been by a city patient or visitor who, at the time, had a choleraic diarrhoea. But there were such numerous and daily recurring opportunities for the transportation of that cause by persons, that it would seem impossible at this time to discover more than Prof. Flint and Dr. Yale have recorded; viz., that on the 9th of July, a patient, in a spacious and salubrious hospital near the southern extremity of the island, suddenly had an attack of cholera, and that a week afterwards, a second and fatal case occurred in the same building. The epidemic on that island reached its acme the second day of August. On that day there were thirty-three new cases, and twenty-three deaths in the work-house alone; in the lunatic asylum, with a population of five hundred, there were five new cases and one death; in the alms-house, three cases and six deaths; and in the penitentiary, four new cases.

The practically essential points in the history of cholera on Blackwell's Island seem to be these:—

1. That in the seventeen days next succeeding the first case of cholera, July 9th, there were nine other cases, and that they occurred in three of the institutions; and that in the first ten days succeeding that period, and ending August 5th, there was an

explosive epidemic, in which, out of a general population of about 5,000 persons, in its work-house, penitentiary, asylum and hospitals, two hundred and forty-two were prostrated by cholera, and one hundred and forty-nine fatally; and that of these there were, during that time, one hundred and seventy cases, of which ninety-seven were fatal, in the work-house, in a population of less than six hundred of the most vigorous, yet most debased people on that island.

2. That the suddenness, extent, and fatality of cholera in the work-house, exceeded anything experienced elsewhere in New York, and that it corresponded in all respects with the epidemic outbreak in the Kings county penitentiary, though even less sudden and fatal than in the latter.

3. That in the dwellings and hospitals in the city of New York and Brooklyn, the ravages of the epidemic were relatively far less universal; the total of fatal cases in New York, the first seven days, being on the first, nineteen deaths; on the second, twelve; on the third, twenty-nine; on the fourth, ten; on the fifth, eighteen; on the sixth, ten; and on the seventh day, eleven fatal cases, including on each day all cholera deaths on Manhattan Island.

4. That as regards the degree of malignancy of the individual cases and the rate of mortality in all persons attacked, there was no perceptible difference between the cholera on Blackwell's Island and the cholera in New York.

During the first two weeks of August, Brooklyn suffered severely, and in the Twelfth and Sixth wards, from the Atlantic street ferry south to Red Hook, that entire low-lying district was smitten by cholera. There were ninety-five fatal cases in the Twelfth, and nineteen in the Sixth wards, in the two weeks ending August 18th. In Raymond street jail, in the Eleventh ward, the epidemic threatened to destroy half the inmates. In the three weeks ending August 18th, there were thirty cholera deaths in and near that penal death-trap. The infection was known to be at work there in July. It is now known that it became a fountain of pestilence to many places in Brooklyn and Kings county. To what extent the outbreak of the epidemic in the county penitentiary at Flatbush, and the diffusion of infection generally, may have been owing, cannot now be asserted. This we know, that the Flatbush, penitentiary was every week supplied with new inmates directly from the jail in Raymond street.

Cholera in the Kings County Penitentiary.—The initial cases of the outbreak of cholera in this model of cleanliness occurred the 21st and 24th days of July. And then, when there was every apparent reason to believe that the visitation was ended, not a case having occurred for a day or more, suddenly, during the night of the 3d of August, there were thirty-eight severe cases of cholera. Dr. Zabriskie's report of that outbreak shows that the pestilence had, beyond a doubt, been incubating for more than a week on those premises, as his first case of pronounced cholera occurred the 21st, and his third on the 24th of July.* And, on the eighth day following, there occurred such an "explosion" of the epidemic as has not been witnessed elsewhere in the Metropolitan district. Nearly fourteen per cent. of the inmates of the penitentiary were seized in a single night, four-sevenths of whom or eight per cent. of the entire population died the next day; and before the inmates could be removed and the infected victims be rescued—all of which was attempted with masterly promptitude and success, for on Sunday the 5th of August, the third day of the epidemic, the male prisoners were all in tents, the females on Monday, and the pestilence was fully arrested—thirty-two per cent. of those miserable men and women were in the cold grasp of cholera, and nearly twenty-five per cent. of the population, or three-fourths of all who were attacked, died in collapse or the consecutive fever.

Mark the instructive comment of the observing deputy registrar, Dr. Stiles, upon the only discoverable local causes of that outbreak: "The penitentiary building occupies, &c."† Subsequent to the removal of the prisoners to tents pitched upon an airy plateau from whence pestilence fled, there happened a kind of proof that the infection lingered in or closely about the building, that must not be forgotten. The five assistant keepers and a female nurse who lodged in the officers' quarters in the penitentiary, were attacked by cholera after it had entirely disappeared from the motley crowd of prisoners and their uninfected camping ground. Three of those keepers died, and the nurse, a fearless lady who went up from the city when the epidemic was announced, and begged the privilege of nursing the sick prisoners, sealed her

*See report of Assistant Superintendent Dr. Conkling, page —, of this volume. The diarrhoea that occurred in a trench digger on the penitentiary grounds the 22d of May, was at the time investigated and believed to have been caused solely by the septic effluvium from the filth-sodden earth in which the man was delving. Such was the conclusion we then recorded.

†See report of deputy registrar of vital statistics.

martyrdom in her death on the 18th, nearly a week after the cessation of the malady among the female prisoners. But the measures pursued for the cleansing and the absolute disinfection of that building and all that pertained to it, were adequate to the destruction of the last trace of local infective causes. On the 28th of August, the penitentiary was re-occupied by the former and the new coming prisoners. Cholera did not re-appear.

During the five weeks included in August, returns of mortality, cholera killed three hundred and seventy-eight persons in Brooklyn and Kings county, according to the reports of Dr. Stiles. In Flatbush, Newtown (including Astoria) and Flushing, there occurred a few cases of cholera during August, but they were under the constant sanitary surveillance of Inspectors Drs. Trask and Hicks, who, in July, had faithfully searched out the localizing conditions that invited the epidemic. And at Hunter's Point and elsewhere in Newtown, cholera made a threatening outbreak as early as the middle of July, and was subdued only by most vigorous measures.

In Westchester county, cholera gained temporary foothold at several points during August; and, so far as reported, its appearance was seen only on the lines of railway and river travel, and principally in the families of laborers on those lines. The records of those outbreaks of the epidemic in the different towns of Westchester, are not yet complete. They will ultimately be included in a record on the prevalence of cholera beyond the cities of New York and Brooklyn. As early as July 16th, fatal cholera was seen in East Morrisania, and in its subsequent appearance there and at Melrose, Woodstock, Tremont and Portchester, it seemed to be truly infectious. Fortunately, the sanitary care of it was such as to limit any considerable distribution of the disease.

August 9th, we received information of two fatal cases of cholera on Staten Island, but throughout the whole course of the epidemic, it failed to make, or, at least, to retain any foothold on that island, which in every previous visitation of cholera to our country had suffered severely. The same inviting local conditions were present in all the Staten Island villages now, as in former times; but there were, this year, two sources of local and personal infection under constant control, which, in the epidemics of former years, were uncontrolled in those villages, viz.: all promiscuous intercourse with the cholera-ships and their emigrant-passengers and baggage was strictly prohibited; and, secondly,

whenever cholera was reported, it was brought under the sanitary care of the local medical officer of the Board of Health, as an infection. We state these facts historically, and leave all questions of evidence to a broader field for generalizations. No section of the whole Metropolitan district beyond the Fourth and Sixth wards in New York, and the Sixth and Twelfth wards in Brooklyn, presented more inviting local causes for the epidemic sweep of cholera than the eastern shore of Staten Island. And let it here be understood that we do not assert this in a theoretical way, for cholera has not only proved its affinity for that beautiful shore, but it has, in the three successive years, 1855, 1856 and 1857, when victims of that pestilence were brought under our observation upon a well policed twenty-five acre lot on that shore, been demonstrated that such cholera would spread to some extent within the guarded inclosure, but that the limits of infection could be strictly confined within narrow boundaries.

PROGRESS OF THE EPIDEMIC IN SEPTEMBER.

The total mortality by cholera in the city and county of New York, in August, was seven hundred and fifty-six. In Brooklyn and the public institutions of Kings county, three hundred and seventy-eight deaths was the sum. But, in September, the latter city lost but eighty-three by cholera, while New York lost two hundred and fifty-nine. By referring to the charts of the epidemic in this report, we see the course which cholera pursued. The acme of the epidemic having been reached early in August, the decline seems to have been steady until September 1st, when there was a gradual rise again in the scale of cholera deaths in New York, but not in Brooklyn. During the first fourteen days of the month, the epidemic killed one hundred and seventeen persons in New York, half of whom were in public institutions, and the residue distributed in about twenty different centres. During that period, several families were swept into the grave in groups; and so great was the tendency to such fatal grouping of victims in families and of several families within a limited area—fields which seldom had a radius of more than a hundred yards—that the greatest vigilance was required to discover and arrest the progress of such grouping. To discover, cleanse, and disinfect all local and infective causes, especially the privies and places that had by any possibility received the cholera or diarrhoeal excrements, and to find and treat every person sick with cholera or choleraic diar-

rhœa, was the very first duty. How well the sanitary officers and the medical practitioners of the city succeeded in that duty, is correctly judged from the results that followed. So fully is the history of that work appreciated by the Board of Health, that it is needless to rehearse the details of it in this report. Both cities and several of the villages of the Metropolitan district were then in very great peril from malignant cholera; and in New York, particularly, the epidemic gained persistent foothold in soil and surroundings, from which it was scarcely possible to eradicate it by the ordinary cleansings and disinfectants. The first, fourth, sixth, the east side of the twelfth, and the western section of the twenty-first and twenty-second wards, embraced cholera fields of this infected character.

The twelfth, the western margin of the sixth and the first, and a portion of the fifth, eighth, tenth and eleventh wards in Brooklyn, gave the chief footholds for the pestilence in that city. And the fifteenth, sixteenth and seventeenth wards, and the entire region southeast from Greenpoint and the mouth of Newtown creek, were menaced, but untouched. Whoever is conversant with the history and habits of cholera, would safely predict that if its presence and ravages depended mainly, or primarily, upon general atmospheric conditions, or if, in our cities, it depended exclusively upon local filth, a miasmatic soil and unhygienic conditions of domestic life, then in the regions of Brooklyn here pointed out, the pestilence would have committed worse havoc than in any other section of that city. Yet in these three mostly filthy and miasmatic wards here mentioned, with a population exceeding 47,000, rivalling the foreign population of the pestilence-stricken twelfth—which was only three miles distant—there were but 11 fatal cases of cholera. We do not exaggerate when we say, that the records of the epidemic warrant the assertion, that to have neglected a single one of those 11 cases of cholera, would have jeopardized a section of that city which contains over 100,000 inhabitants. In that particular section, south from, and adjacent to, Newtown creek and its junction, less than 25 cholera deaths occurred in the whole season. To the vigilance and intelligent care of her sanitary officers the city of Brooklyn owes a debt of gratitude.

The events of the epidemic throughout the month of September, proved that vigilance was the price of safety. If any sanitary inspector, or any observing physician, had previously doubted

the necessity or the usefulness of thorough cleansing, and the specific and profuse disinfection that had become standing sanitary regulations, to be instantly enforced—the experiences of September were sufficient to remove such mental doubts. But for the presence of cholera, the season was in every respect salubrious; the streets and open areas of the city were vastly cleaner than at any former period in ten years.

Beyond the boundaries of the two cities, in Westchester and Queens counties, cholera made repeated outbreaks, and it is believed that in every instance where a surrounding population was exposed to its re-propagation, there was no failure to destroy the excrements, and disinfect all saturated clothing, &c., of the sick.

In the institutions on the East river islands, there continued to be maintained an admirable system of sanitary surveillance by which every case was brought under observation in the first stage, and the infective excrement destroyed. And, with the records of the epidemic nearly completed, we are now warranted in the opinion that in some of the buildings, and upon some of the grounds on those three islands, the infection of cholera had in some manner fixed itself in the soil, for there were such repeated outbreaks and groupings of fatal cases, as indicated the near presence of established foci of the pestilential poison.

PROGRESS OF CHOLERA IN OCTOBER AND NOVEMBER.

The course of the epidemic in these two last months of its presence is correctly indicated by the following numbers, marking its decline and utter extinction. In the successive weeks ending December 1st, we recorded the cholera deaths in New York thus: 36, 12, 5, 3, 5, 0, 1, 1, 1. With these sixty-four fatal cases, the record of the epidemic among us has ended for this year. In Brooklyn, and all other places in the district, it ceased early in November.

HOW MUCH MORTALITY IS CHARGED TO THE CHOLERA EPIDEMIC, AND HOW WAS CHOLERA PROPAGATED.

In the subjoined table, we present a condensed abstract of the records of mortality, upon which the correct answer to the question depends, "How much death resulted from the presence of cholera the past eight months?" We have ample proof that of the number of persons who died in New York, between the 1st of May and the last day of November, 1,212 died of Asiatic cho-

lera. We have abundant evidence that this was the kind of cholera that is capable of re-propagation or infection by means of excremental discharges from the sick, when favored by local circumstances. And we will here state that with the accumulated records before us, and after personal inspection of every locality in the two cities in which the cholera prevailed, the evidence upon the question of the primary dependence of the cholera among us last summer, upon the infective property of the excremental discharges of the sick, may be stated as follows:

First.—That Asiatic cholera of a very infectious character was brought to the port of New York by the emigrant ships *Atalanta*, *Virginia*, *Peruvian*, *Union* and *Bavaria*, and that a large number of other ships landed at Castle Garden more than 50,000 emigrants, from countries on the continent of Europe, in which cholera was present at the time of their departure for New York.

Second.—That twenty-seven persons died of cholera at the Emigrant Refuge, on Ward's Island, in the last weeks of 1865, and the first weeks of 1866, and that the remains of those dead were interred on that island.

Third.—That, with the exception of the outbreak just mentioned, there was not an excessive quantity of fatal diarrrhœal diseases in New York the first six months of the year. The following figures prove this, and they also show that there had been a gradual and striking increase in those diseases, year by year, the past six years:

Total Mortality from the Diarrhœal Diseases, in the first six months of the year ; the six years ending June 30, 1866.

	Cholera.	Cholera Morbus. Infantum.	Cholera Diarrhœa.	Dysentery.	Total for Month.	
January, 1861.....	--	1	2	14	5	22
1862.....	--	1	2	13	2	18
1863.....	--	2	4	30	13	49
1864.....	2	--	2	39	8	51
1865.....	--	--	2	30	9	41
1866.....	--	--	8	28	19	55
	—	—	—	—	—	—
Total	2	4	20	154	56	236
	==	==	==	==	==	==
February, 1861 ..	--	2	5	9	5	21
1862 ..	1	6	--	8	7	22
1863 ..	--	1	3	18	5	27
1864 ..	1	5	2	26	2	36
1865 ..	--	--	1	28	17	46
1866 ..	--	1	1	21	15	38
	—	—	—	—	—	—
Total	2	15	12	110	51	190
	==	==	==	==	==	==
March, 1861	--	1	2	10	2	15
1862	1	1	3	19	10	34
1863	--	3	1	15	7	26
1864	--	--	5	24	9	38
1865	--	--	1	26	10	37
1866	--	2	10	20	13	45
	—	—	—	—	—	—
Total	1	7	22	114	51	195
	==	==	==	==	==	==
April 1861	--	1	3	14	5	23
1862	--	1	4	16	4	25
1863	--	3	7	22	4	36
1864	--	2	7	37	12	58
1865	--	--	7	23	10	40
1866	--	2	6	57	25	90
	—	—	—	—	—	—
Total	--	9	34	169	60	272
	==	==	==	==	==	==

ANNUAL REPORT OF THE

	Cholera.	Cholera Morbus.	Cholera Infantum.	Diarrhœa.	Dysentery.	Total for Month.
May, 1861.....	--	4	7	15	3	29
1862.....	1	3	12	10	6	32
1863.....	--	5	15	35	7	60
1864.....	1	2	6	38	7	54
1865.....	--	4	12	14	15	45
1866.....	1	3	8	56	16	84
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
Total	3	21	58	168	54	304
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
June, 1861	1	4	24	28	9	66
1862	2	2	21	33	10	68
1863	9	4	14	26	16	69
1864	--	4	35	48	24	111
1865	--	3	63	53	22	141
1866	10	12	68	77	29	196
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
Total	22	29	225	265	110	651
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
1861						176
1862						199
1863						267
1864						348
1865						350
1866						508
						<hr/>
Total for six months						1,848
						<hr/>

Deaths from Cholera in New York city, by wards, &c.—Continued.

WARDS.	FOR THE WEEK ENDING					Total population (in Wards), census of 1865.	Total cases of cholera to 10,000 people.	Rate of population to square mile.	Total of cholera deaths in each ward, including all fatal cases that were sent therefrom to cholera hospitals.	Total deaths, (including cases) to 10,000 inhabitants.
	November 3.	November 10.	November 17.	November 23.	December 1.	Total.				
First	14	14	41,050	37	37 1-2
Second	2	163	9,950	2	16 3-4
Third	1	3,367	22,447	2	5 9-10
Fourth	25	17,352	133,477	38	29 9-10
Fifth	12	18,205	69,904	18	9 1-3
Sixth	1	.....	.....	90	19,754	151,954	125	63 1-4
Seventh	18	36,962	119,232	22	5 9-10
Eighth	19	30,098	103,786	22	7 3-10
Ninth	12	38,504	77,004	14	3 6-10
Tenth	13	31,837	185,512	14	4 2-5
Eleventh	13	58,953	196,510	13	2
Twelfth	25	28,259	5,195	39	13 4-5
Thirteenth	10	26,888	155,224	10	3 3-4
Fourteenth	28	23,382	153,880	37	15 4-5
Fifteenth	1	.....	.....	3	25,572	82,490	4	1 1-2
Sixteenth	14	41,972	69,953	15	3 6-10
Seventeenth	22	79,563	153,006	24	3
Eighteenth	10	47,613	51,197	11	2 3-10
Nineteenth	20	39,945	16,713	25	6 1-4
Twentieth	33	61,884	91,006	35	5 2-3
Twenty-first	8	38,069	52,255	8	2
Twenty-second	66	47,361	21,334	76	16
Total	5	.....	2	.....	.....	458	726,386	43,364	591	8 1-10

There were admitted to cholera hospitals from Westchester, Castle Garden and places not stated, eight fatal cases.

* On the next page the reader will see from what wards the patients were taken to be treated at cholera hospitals; also, the total number of deaths from cholera in each street and ward of the city of New York, including the sick in hospitals—assigned to the streets and to the wards from whence they were taken to hospital.

Deaths by Cholera in Battery Barracks and Red House Hospitals, accredited to the wards in which the patients resided before admission to hospital.

	Battery hospital.	Red House hospital.
Ward 1	23	---
3	1	---
4	13	---
5	6	---
6	35	---
7	4	---
8	3	---
9	2	---
10	---	1
12	1	13
14	9	---
15	1	---
16	1	---
17	2	---
18	1	---
19	---	5
20	1	1
22	2	8
Melrose	---	1
Castle Garden	---	3
Mott Haven	2	---
Not stated	2	---
Total	109	32
Grand total	==	== 141 ==

Deaths from Cholera in the public institutions of New York, from July 7 to December 1, 1866.

NAME OF THE INSTITUTION.	FOR THE WEEK ENDING															Total	Remarks.								
	July 7.	July 14.	July 21.	July 23.	August 4.	August 11.	August 18.	August 25.	September 1.	September 8.	September 15.	September 22.	September 29.	October 6.	October 13.			October 20.	October 27.	November 3.	November 10.	November 17.	November 24.	December 1.	
Ward's Island	1	...	2	29	220	210	99	63	35	16	33	22	12	5	2	...	1	1	...	...	...	...	172	
Workhouse, B. I.	4	66	53	11	3	...	1	3	7	3	...	...	...	...	...	...	...	...	...	151		
Almshouse, B. I.	20	29	16	16	8	...	4	2	...	...	...	...	...	...	...	...	...	...	95		
Charity Hospital, B. I.	1	1	18	13	5	2	...	...	...	...	...	...	...	...	...	...	...	...	...	41		
N. York City Lunatic Asy., B. I.	2	9	23	13	9	7	5	2	2	...	...	...	...	...	...	...	...	...	...	74		
Penitentiary, B. I.	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6		
Randall's Island	9	7	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	20		
Bellerue Hospital	6	4	4	7	1	...	...	...	1	...	...	...	...	1	...	...	...	...	33		
New York Hospital	1	...	...	1	1	8	4	7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	
City prison.	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2		
Castlo Garden	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3		
Mt. Sinai Hospital	3		
Fort Columbus, N. Y. Hospital.	2		
Small-pox Hospital, B. I.	1	...	1	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2		
Colored Home.	1	2	
Nursery and Child's Hospital.	4	...	...	2	1	...	...	...	1	...	...	...	...	1	...	...	...	...	1		
Battery Hospital	4	19	20	20	10	12	8	4	12	7	5	4	2	...	...	...	...	...	...	...	8		
Red House Hospital.	8	5	2	4	3	8	2	...	...	...	...	...	...	...	...	...	...	107		
	32		
Total.....	1	...	2	29	220	210	99	63	35	16	33	22	12	5	2	...	1	1	...	...	...	...	752	

Table showing the number of deaths by Cholera during the months of June, July, August and September, 1866, with a classification of the ages, nationalities and occupation.

Month.	Total.
June	7
July	50
August	170
September	115
Total	<u>342</u>

Nativity.

Ireland	190
United States	73
Germany	36
England	21
Scotland	5
France	4
Sweden	3
Canada	2
Poland	2
China	1
Italy	1
Australia	1
At sea	1
Not stated	2

Ages.

Ten to fifteen	3
Fifteen to twenty	13
Twenty to twenty-five	39
Twenty-five to thirty	47
Thirty to thirty-five	50
Thirty-five to forty	37
Forty to forty-five	41
Forty-five to fifty	32
Fifty to fifty-five	25
Fifty-five to sixty	24
Sixty to sixty-five	16
Sixty-five to seventy	12
Seventy-five to eighty	2
Eighty to eighty-five	1

Irish.

Occupation.	No.
Boatman	3
Clerk	3
Carpenter	3
Farmer	1
Boilermaker	2
Butcher	1
Baker	1
Cook	2
Currier	1
Carman	4
Coal-passer	1
Domestic	50
Fruit dealer	2
Gardener	1
Grocer	1
Housekeeper	11
Hack-driver	1
Hostler	1
Harness-maker	1
Laborer	65
Laundress	3
Longshoreman	1
Moulder	1
Mason	4
Miner	1
Musician	1
Nurse	3
Peddler	2
Printer	2
Porter	2
Pickle-maker	1
Seamstress	4
Soldier	4
Shoemaker	2
Stage-driver	2
Teamster	1
Washerwoman	2

United States.

Occupation.	No.
Apothecary	1
Boatman	1
Book-keeper	1
Brushmaker	1
Carpenter	5
Carman	2
Cook	2
Clerk	3
Carver	1
Cooper	1
Carriage-trimmer	1
Domestic	8
Farmer	1
Housekeeper	2
Harness-maker	1
Japanner	1
Laborer	8
Merchant	2
Musician	2
Mason	3
Mechanic	3
Manufacturer	1
Physician	4
Porter	1
Printer	1
Seaman	2
Shoemaker	2
Stewardess	1
Seamstress	4
Soldier	1
Silver-plater	1
Steamer captain	1
Tobacco packer	1
Tassel maker	1
Tailor	1
Washerwoman	1

Germans.

Baker	2
Butcher	1

Occupation.	No.
Brass finisher	1
Cigar maker	1
Confectioner	1
Domestic	5
Grocer	5
Gunsmith	1
Housekeeper	3
Laborer	4
Moulder	1
Merchant	1
Peddler	1
Porter	1
Restaurant	1
Seaman	1
Scavenger	1
Shoemaker	1
Soldier	1
Tailor	2
Teacher	1

England.

Butcher	1
Baker	1
Blacksmith	1
Bookkeeper	1
Bookbinder	1
Carpenter	1
Clerk	3
Hoopskirt manufacturer	1
Laborer	3
Porter	1
Painter	1
Peddler	1
Seamstress	1
Sailmaker	1
Tinsmith	1
Watchmaker	1
Wool-sorter	1

MISCELLANEOUS NATIONALITIES.

Scotland.

Occupation.	No.
Currier	1
Laborer	3
Machinist	1

France.

Domestic	1
Laborer	2
Tailor	1

Sweden.

Sailor	3
--------------	---

Canada.

Laborer	2
---------------	---

Poland.

Peddler	1
Painter	1

China.

Seaman	1
--------------	---

Italy.

Peddler	1
---------------	---

Australia.

Domestic	1
----------------	---

At Sea.

Laborer	1
Not stated	2

Fourth.—That the experience of suburban towns in the Metropolitan district having the same general conditions of weather, as well as the experience of neighboring cities the past ten months, does not warrant us in believing that the excessive mortality from the ordinary diseases was caused primarily and solely by any peculiarity of the weather, or that the excess above the ordinary average of such deaths was wholly independent of the presence of cholera.

Whatever may be our rational inferences concerning the agency of the cholera in giving fatal activity to the ordinary causes and pathological events of common uninfected diarrhœas, science has not yet revealed the secret of that power, nor has it explained precisely by what chemical processes the cholera excrement acquires its infective and re-propagating power after being voided from the sick, or while contained in the bowels of the cholera dead. As the examination of this most curious and practical subject connected with the producing causes of cholera, would be foreign to this report, we but advert to its relations to facts which appear in the records of the epidemic. And we here dismiss the subject with this remark, namely: That trustworthy and very accurate hygienic and medical observations seem to have discovered the important fact that each of the chief pestilential diseases extends its baleful influence beyond the limits of that number of susceptible persons who become fully infected or capable of re-propagating the infection; and, further, that the influence of the pestilence is chiefly exhibited upon that class of maladies which is most naturally allied or analogous to itself.

Upon this ground we venture no further. Such hypothetical propositions are footmarks in the progress of medical knowledge. But we add one practical and indisputable fact to this record of the epidemic, in stating that while we have witnessed abounding evidences of the truth that the excremental discharges of the cholera sick do, under favoring conditions, become fatally infectious, there has not yet been discovered a single instance in which a case of diarrhœa, not justly suspected of being choleraic, and liable to speedily terminate as malignant cholera, has even appeared to cause any such infectious consequences in the surrounding population, and in neglected privies and porous soil, as the true cholera certainly produces. Again, the fact has been observed the world over, that in the presence of cholera, the most ordinary diarrhœal malady takes on all the phenomena and characteristics

of that pestilence, and that the malady which previously was harmless to others, and not fatal to itself, is supplanted by, or has added to itself the properties of, truly malignant cholera; and these common diarrhœas most powerfully predispose to attacks of the epidemic.

In reviewing this feature of the threatening pestilence from which we have so narrowly escaped, true interpretation must be given of the facts which appear so prominently in our records of cholera and the fatal diarrhœas. We have endeavored to ascertain the history of every case of cholera, and every case of diarrhœa in New York. The map at the end of this report, points out precisely where every fatal case of each malady was found, and the symbols of each show precisely how they were grouped, and in what regions there were vast quantities of diarrhœal disease which escaped the presence if not the influence of cholera. As the best practical conclusion of this review, we beg leave to subjoin a remark by Dr. John Simon bearing directly upon the points here presented. As chief officer to the Lords of the Privy Council, and as a widely recognized medical philosopher and hygienist, whose marvellous grasp of sanitary principles and the public duties they impose, elevates him to the rank of a statesman and a philanthropist, Dr. Simon's official papers command universal regard. We quote from an official circular which he kindly forwarded to us recently:

"In places where cholera is present or threatening, one particular bodily ailment requires exceptional vigilance. That ailment is diarrhœa. For the most part in this country cholera begins somewhat gradually; so that, for some hours or even days before the symptoms become alarming, a so-called 'premonitory diarrhœa' may be observed. Where cholera is tending to be epidemic, there always exists, side by side with it in the district, a large amount of epidemic diarrhœa, representing in part the earlier stages, in other part the slightest degrees, of the same insidious and infectious malady. This diarrhœa (painless and apparently trivial though it be) may in any case suddenly convert itself into cholera; and, apart from the very serious significance of the symptom as regards the patient himself, it must be remembered that every such diarrhœal patient may be a well-spring of infection to others. It also seems probable that accidental diarrhœa, originally independent of the epidemic influence is, of all known personal conditions, the one on which the cholera

infection can most easily fix itself. And thus on all accounts it is of the most essential importance that no looseness of bowels should be neglected in places where cholera exists. A very important part of their Lordship's Medical Relief Regulations, enjoins the making of local arrangements by which this object shall be secured for all the poorer inhabitants of infected districts; and other classes of the population are warned to be also vigilant for themselves. In any infected district, every looseness of bowels, or sickness of stomach, ought, as quickly as possible, to be brought under skilled medical treatment; and if the symptoms begin at all sharply, or if they (however mild) do not very promptly yield to treatment, the patient ought invariably to remain in bed.

Too much importance cannot be attached to the duty of thoroughly disinfecting, without delay, with chloride of lime or otherwise, all discharges from the stomach and bowels of persons under the epidemic influence, as well as all bedding, clothing, towels and the like, which such discharges may have imbued. And measures, as advised in section four, for keeping all privies and like places in a thoroughly clean and uninfected state, became more and more important in proportion as the discharges in question are likely to have access to the places."

THE CHOLERA FIELDS OF THE METROPOLITAN DISTRICT.

The localities in which cholera prevailed in the district are so distinctly and so variously indicated by topographical, domiciling and social conditions, that as we now turn to describe them, it is almost impossible to say whether the geographical characteristics and map delineations, or the bare records and living reminiscences from official inquiry and personal visits upon the fields thus marked out, would most clearly convey to minds unfamiliar with the facts, what seems most essential to a description of our cholera fields. And we must not overlook the fact that the low and undrained districts, the filthy streets, the overflowing privies, the neglected and damp court-yards and cellars, and the crowded tenements, that are the most constant characteristics of the cholera fields in New York and Brooklyn, are inhabited by the most ignorant and unhygienic people in our midst. But it is well ascertained that no one of all these circumstances alone is an invariable characteristic of the cholera fields. We have here mentioned them in about the order of their respective degrees of constancy.

Geological and Topographical Characteristics.—The five counties constituting the Metropolitan district, embrace various but very simple geological features, some of which need to be noticed in our report of the cholera fields.

The great ridge of gneiss, primitive limestone, schist, serpentine, and granite, that extends through the whole length of the district, for fifty miles from north to south along the course of the two great rivers, besides being broken by irruptions of basalt and serpentine, is at almost every half mile curiously diversified by abrupt upheavals and contortions of the rock strata by deep erosions, and by rudely ruptured and dissevered strata of the rock.

With a surface and soil made up of porous diluvium of moderate depth, or of alluvium in narrow patches and marsh lands, the grounds upon which these two cities are laid out, embrace a great quantity of surface which is at once exceedingly porous and humid. Not only does the greater part of the district, particularly the counties of New York and Westchester, abound in springs and natural streamlets, but living water is found near the surface. The numerous wells in the upper part of New York city are generally very shallow, and during the dryest period of the year, we found the shanty population on the ridge west of the Central Park, obtaining water from living wells and springs less than eight feet below the surface.

There is but little ferruginous soil in the district, except in a certain portion of Staten Island. The soil of the city is alkaline, wherever I have examined it, and, for a region so favored in natural drainage, the counties of New York, Kings, Richmond, and the greater part of Westchester and Queens, have ever been remarkable for paludal malaria. These facts are regarded as important in a description of essential characteristics of our cholera fields.

In both cities, large areas of marsh and lowland were years ago filled in with all kinds of rubbish from the built-up regions. The primitive marsh lands were chiefly in the First, Fourth, Fifth, Sixth, Eleventh, and Seventeenth wards. In our map of the cholera fields, it will be noticed that the limits of most of the cholera fields, are nearly coincident with the boundaries of the old alluvial moist and swamp lands and the filled-in water-courses. But we need say here, that in the logical history of the epidemic, it would be impossible to determine whether the nature of the filth-soaked and humid soil, the wretched tenant-houses, or the unhygienic habits

and surroundings of the inhabitants of those regions, had most to do in propagating the cholera which prevailed there.

Looking upon the record of cholera in the different wards of New York, as presented in the subjoined abstract, it will be seen that in the order of relative severity, the Sixth, Twenty-second, Twentieth, Fourth, Thirteenth, Eleventh, First, Seventh, and Seventeenth wards, suffered the ravages of cholera in fields that were ripe for a much greater harvest of the pestilence.

By turning to the map at the end of this report, it will be seen that there seem to have been distinct cholera fields, and that while each of them has its individual characteristics which differ very widely from the peculiarities of another, they mutually share in certain leading physical conditions. For example we may notice the fact that the cholera field in the twenty-second ward, on the western margin of the Central Park, is situated upon one of the most elevated plateaus of the city, the grade level of the English avenue at Sixty-ninth street, being about seventy feet above tide-water mark, while the grade level of Washington street, in the centre of the "cholera field" of the first ward, is scarcely above tide-water. Indeed, all, except the first field named, are very near the tide-water level, that in the sixth and that in the fourth ward being less than twenty feet above tide, though there were two or three small auxiliary fields on the third avenue and another near Manhattanville that were above the average level of the city.

Again, it is noticeable that while the cholera fields in the twenty-second and twentieth wards are upon a rough, rocky base, with but a thin covering of soil, the other fields are, as elsewhere mentioned, mostly on the sides of old marsh lands or filled-in water courses, and all are justly accused of bad local drainage. But in this one feature all the New York cholera fields are alike, namely, most of the inhabitants of those particularly unfortunate districts live in habitual neglect of all sanitary rules in regard to themselves and their domiciles.*

*The sanitary history of the "mission houses" in the fourth and sixth wards is so instructive in regard to the means of protection against cholera, in the very midst of an epidemic, that the following extracts are inserted from the correspondence of the bureau relating to the experience in them the past season :

FIVE POINTS HOUSE OF INDUSTRY, }
155 WORTH STREET, Oct. 10, 1866. }

To Dr. ELISHA HARRIS, *Chief of Bureau of Vital Statistics:*

My Dear Friend—In response to your inquiries in regard to the general health of this institution, and the means adopted to prevent sickness, I give below a statement of Dr.

At this point we mark that important fact in our records of the epidemic which proves that not all, and not uniformly the worst and filthiest localities, blocks, houses, apartments, or individuals were visited by the pestilence. We point out two illustrations of this fact: The cholera field on the south-western flank of the Cen-

Freeman, the resident physician, which will, in part, cover the general ground of your inquiries.

Our family has numbered, through the entire summer, about *two hundred*—three-fourths being children from two to fifteen years of age, and averaging not more than seven years. In addition, we have had about one hundred and fifty children daily coming from without to attend our schools; coming to breakfast and remaining through the day. These children are from the poorest families of the neighborhood, as it is the object of the institution to reach only those who would not attend the public schools. We have a hospital, with some thirty beds, for the accommodation of our inside children that need hospital treatment; and for two years we have been in the habit of receiving the very sick outside children connected with our schools, when we knew that their home accommodations were wholly unfavorable to their recovery. It is wonderful to see how, almost immediately (when brought from their cellars into our clean, finely ventilated hospital) they improve. We have repeatedly seen children that seemed as if they must die when they were brought in, show the most hopeful changes in less than twenty-four hours; and many of these with severe attacks of fever, recover immediately.

During the whole summer not a single death occurred in the Mission family, and but one during the year—which was an infant having first bowel difficulties, and then measles. Hardly a single case of severe illness occurred during the summer, all difficulties yielding immediately to treatment. It seems to us singularly providential that we should have been so wonderfully delivered, when the circumstances are considered.

There is hardly a single day passes when we do not receive into the House from one to two adults, who remain with us until employment can be obtained for them. A majority of these women are intemperate. That is to say, they come from their situations (mainly in the country) well clad, with more or less money, fall among old friends, drink for acquaintance sake; and after drinking until they are oblivious, lose money and clothing; and when the carousal can last no longer for want of means, they come to us in a condition the best possible to predispose them to cholera. On each side of us, and immediately in our rear, cases of cholera occurred. Mission place, better known as "Cow Bay," forming our line on the west, and on which our school-rooms front, has been, all the season, and is, in a most horrible condition. The buildings on the side opposite ours have been occupied by the most filthy and degraded beings in our city. There is no sewerage of any kind connected with these houses, and all the slops and filth of these miserable beings were thrown on the ground under our windows all summer long, creating such a stench much of the time, as to be almost unbearable. Our complaints to the Board of Health secured occasional applications of lime and chloride, and we made frequent applications ourselves, the Board seeming to have no power to afford us permanent relief. But these facts do not constitute the whole picture. More than two years since, Worth street, from Broadway to Baxter, was widened and filled up to the depth of some five feet, and remaining unpaved until within the last few weeks, it has been a mud-hole for the two winters, and the surface dirt saturated through two summers and winters with the offal from all the families living on the streets, it can readily be imagined how damaging to health the exhalations must have been during these two summers, and especially the last.

In regard to any preventive measures, I would, first of all, refer you to the Ninety-first Psalm, as illustrative of our impression of the source of our security; and to show our sense of the importance and necessity to use all proper means to secure health among our inmates. I would say that for years it has been a constant study in all possible methods to improve and perfect the ventilation of our establishment, and although it has been a common remark from visitors, as they have gone over the house, "how pure the air is

tral Park is one of four "shanty villages" of people vulgarly termed "squatters." It is by far the most "aristocratic" and thrifty of the four villages or clusters of the kind. Those villages are all situated upon the same kind of bare rock—upheaved masses of granite, gneiss and sandstone—covered over less than

here," we have used our own senses by day and night to perceive defects, and, when discovered, to remedy them. Windows in all the dormitories are never allowed closed, summer or winter; beds and bedding are allowed at least an hour's airing every morning; floors throughout the house thoroughly scrubbed once or twice each week, some of them every day, and fully bathed once in each week. Disinfectants or deodorizers have been generally used in all parts of the establishment, and the sewerage kept in perfect order. The general food of the family has been much as usual through the summer. Bean-soup twice, and vegetable soup twice each week, with plenty of beef and mutton boiled with them. Four meals per week of stews or hash, one of Indian pudding or hominy, bread and butter once, and several pieces of bread with malt coffee. Fruits have been given to them occasionally. They are not allowed to eat at all between meals. Our bread is made of the best wheat, rye and Indian, in the following proportions: Wheat, one-half, rye, a little more than one-fourth, and balance of Indian. The rye and Indian we have ground in the country, and sent to us in bags, as we order. The rye is unbolted, retaining the bran, which is deemed very desirable. Though much exposed to small-pox, receiving so many as we do from the outside into our schools, we have avoided it entirely by a constant system of vaccination; our physician noticing all new-comers, administers it to them. I think our freedom from this loathsome and dangerous disease affords the clearest proof of the necessity and efficacy of vaccination.

Respectfully yours,

S. B. HALLIDAY,

Supt. of Five Points House of Industry.

Statement of the Resident Physician of the House.

Rev. S. B. HALLIDAY, Superintendent, &c.:

Dear Sir: In regard to the interrogations in Dr. Harris' letter, to which you desire me, as Physician to the House of Industry, to furnish you with definite replies, I have to say:

1st. It may be asserted, with perfect safety, that no case of cholera, nor of any disease resembling cholera, has this year occurred among the in-door pupils or permanent household of the Institution. In my report of last month to our board of trustees, I remarked as follows: Our large family has continued remarkably free from dysentery, cholera morbus and diarrhoea—the severer forms of those complaints having affected only its casual members—adult females—for the most part given, more or less, to habits of intoxication. This is the record of the only case of epidemic cholera which occurred in the house. In this, the complaint, having lasted an entire night, was so far checked next morning, by the time the patient was sent away for lack of accommodation, that she was refused admission to the "Battery Barracks," and, on returning, apparently relieved of all urgent symptoms, was sent to be disposed of by the Commissioners of Charities, since which time she has not been heard from.

2d. There has been no remarkably "prevalent diarrhoeal tendency" among our children, except during the month of July. My report for that month says: "The considerable increase in the number of cases over that last reported, is accounted for by the recent prevalence of diarrhoea. Forty cases of this complaint have been treated within the past month, against five included in the aggregate for June, and eleven which occurred in July of the previous year.

Respectfully,

GEORGE L. FREEMAN, M. D.

Resident Physician.

half the surface with a scanty and filth-soaked soil. The crevices and gullies among all those rocky areas are manured and cultivated for vegetables. Nearly one thousand people dwell in each of those villages. In all of them, except that west of the Central Park, the families obtain their water from the Croton hydrants; but in the exceptional case a majority of the families have their favorite tea-water wells hard by their shanty domiciles, generally still nearer to the pig-stye or to the privy.* Only five or six fatal

Dr. E. HARRIS, *Registrar of Vital Statistics*:

Dear Sir—According to your request, I have drawn up a short statement of the health of the various Mission establishments under my professional care during the late prevalence of cholera.

THE HOWARD MISSION.

The Mission house is situated in the Fourth ward, and is in close proximity to the fever nests and cholera fields; a few cases of diarrhœa have occurred, but not a single case of cholera has made its appearance in the Mission buildings, owing to the thorough sanitary regulations, and the constant use of disinfectants. No death has occurred during the year, and the health of the Mission has been remarkably good, considering its location.

The school-rooms are too small to accommodate all the children who attend the Mission. The average attendance is 450. The dimensions of school-room No. 1 are 47x24x14x200, giving 77 cubic feet of air space to each child. Room No. 2, 47x24x11x250, giving 51 cubic feet of air to each child. Though the best system of ventilation has been adopted, yet the health of both teacher and scholars must necessarily suffer, especially during the winter months.

In the families of those attending the Mission, cholera has prevailed; but owing to the prompt medical attendance, many lives have been saved, the physician always taking the proper remedies with him, and not leaving the case till the urgent symptoms are removed.

FIVE POINTS MISSION.

The Mission is under the superintendence of the Rev. J. N. Schaffer, and is situated on the site of the Old Brewery at the Five Points. The Old Brewery was a nest for cholera in 1849. The present building consists of school-rooms, chapel, and apartments for the residence of working people, the two upper floors being used for tenant purposes. It is to these floors that I desire to call your attention. The system of ventilation in them is very good—better than is to be found in any tenant-house. The number of families at present in the tenant-house is eighteen; number of adults, thirty-two; number of children, fifty-four; total population, eighty-six; air space to each person, nearly eight hundred cubic feet.

During the last summer only twelve cases of diarrhœa have occurred, of which five were adults, and seven were children. No cases of cholera have occurred in this building, though it has prevailed all around it. The reasons why this tenant-house has escaped the ravages of the disease is owing to its good sanitary condition, its thorough ventilation, and the constant oversight of the superintendent of the mission.

Yours, truly,

WM. F. THOMS, M. D.,

92 Madison street.

*Samples of water obtained from seven of the wells most used by the shanty population between Sixty-fourth and Sixty-ninth streets, west of Eighth avenue, during the epidemic there, we found to be sparkling and clear, but yielding from six to twenty-four grains of organic matter *oxidizable* by permanganate of potassa. This impurity alone would produce diarrhœas, or for years passed it has produced them in some fatal degree every sum-

cases of cholera occurred in the three chief villages, excepting the Central Park settlement. In the latter place the pestilence displayed its greatest virulence and most stubbornly resisted all disinfection of apartments and clothing, and the destruction of all saturated clothing by fire had little effect. The infection was in the filth-sodden covering of those rough rocks, and in the water of their shallow wells, which received the surface-drainage as a funnel receives the fluid when it is poured upon its concave face. We visited the pestilence-stricken population, took the evidence as we found it on the spot, and arrived at the conclusion here indicated, viz., that the local sources of infection there were for the season beyond the control of sanitary officers, unless the wells were shut up and the surface-soil saturated with some powerful disinfectant. But in each of the other shanty villages, the destruction of the local sources of infection was not a task of such uncertainty. It was a task repeatedly performed with entire success.

Local Nuisances—Privies and Filth—as Localizing Causes of Cholera.—Of all the local nuisances and other obvious causes that served to localize the groups of cholera, none was so constant and none so important as neglected privies unconnected with sewers, or when obstructed and foul. Yet, it was not invariably found that the privies were either unconnected with the sewer, or that they had become obstructed. The fatal outbreak in the great tenant house on West Forty-first street, near Ninth avenue, was not localized by this cause. Its water closets were found on every floor to be clean and tolerably well “flushed.” Yet there is much reason to believe that even those water closets in what has been regarded as a model house—though it is a *bad* model, being in the style of a hollow square—were in some measure responsible for some of the deaths by cholera in that building.

This is not the occasion for presenting the proof that many privies become infected by the excrement of the cholera sick.

mer. But it was malignant and infectious cholera that ravaged that neighborhood this year.

In the cholera that spread so universally about a famous public pump in the Twelfth ward in Brooklyn and in a group of families that were smitten by cholera on the hill-top of Hudson city, in New Jersey, in October last, we witnessed conclusive evidence of the fatal influence of the well-water used by the families that were attacked. Each of those wells received privy soakage that was reasonably believed to be infected by cholera excrement, for copious quantities of the latter were known to have been cast into overflowing surface privies near by the wells. In each of the localities here mentioned the first few cases of cholera were succeeded by an “explosive” outburst of it in the families that used the well-water in preference to hydrant water.

We are warranted in asserting that there was abundant evidence of such infective influence of the "rice-water" excrement. No principle in hygiene needs to be more practically understood and enforced than that which is illustrated in the Levitical Sanitary Code, regarding the immediate and daily care of human excrement. We do not exaggerate in writing here as a conclusion of sanitary science, that, in the presence of Asiatic cholera, every uncleansed and unsewered privy is a source of public danger, unless daily and copiously treated with suitable antiseptics. Also, that to cast into such privies, or even into the ordinary water-closet, the cess-pool, or a sewer, the excremental fluids of cholera patients, before destroying the infective power of such fluids with giving antiseptics, incurs a liability to such a perpetuation and increase of the cholera virus, as places the surrounding population in fearful jeopardy.

The influence of any and all other nuisances sinks into insignificance in the comparison with that of neglected and putrefying excrement. By an inspection of the map of the cholera fields, the fact clearly appears, that in all the sections where fat-melting and bone-boiling, slaughtering, and hide-packing are carried on in New York, there, in the immediate vicinity, was a region where cholera prevailed, fatally, if not in compact groups of cases.

Density of Population influencing the Prevalence of Cholera.—On page 189 of this report the principal facts relating to this question are presented at one view. And, with the great advancement which has been made in the exact knowledge of the localizing causes, and, more particularly, of the positively *infective chief cause* of cholera, it is not necessary to present further evidence relating to this subject. The fact seems to be clear enough, that a very dense population may be protected from cholera, or may escape it, because of natural and hygienic conditions, while in the same city or in neighboring towns a sparse population, living unprotected by sanitary care, may be decimated by the epidemic, which at the same time found no foothold in the protective but densely peopled districts.

METHODS AND MEANS OF SANITARY PROTECTION AGAINST CHOLERA, ADOPTED BY THE METROPOLITAN BOARD OF HEALTH.

As it is not the object of this record of the epidemic to set forth the details of the work performed by the executive officers of the Board we state the facts under this head:

First. The plans of the Board, as prepared in the month of April, contemplated the probability of an epidemic that would possibly call forth the utmost resources and exertions of the medical profession in the two cities. And the admirable system which was in May submitted by the Board's elected Director of Medical Relief, Dr. Stephen Smith, in concert with all the incorporated dispensaries in New York and Brooklyn, and with the concerted action of a large body of physicians, was adequate to any "house-to-house" visitation which could be possibly required. As already mentioned by the sanitary superintendent, Dr. Dalton, that system was not called into general operation. The record of the acts of preparation for perils that were escaped, will everywhere be regarded as evidence, not only of a judicious provision on the part of the Board, but of the intelligence and philanthropy of the physicians and dispensary officers who so cordially entered into the plan.

Second. The adoption of the methods of cleansing and disinfection, and of a strict sanitary control of the persons and premises of all the cholera patients, was, under Providence, the chief and controlling means by which the pestilence seemed to be kept in abeyance. And one of the essential means of such success was the prompt transmission of dispatches and orders by means of the police telegraph, and especially by an obedient and untiring staff of educated sanitary inspectors, together with a special "disinfecting corps." The plan was inaugurated in the very first of the cholera cases. Its practical working may be correctly judged by the following illustrations:

"FOURTH PRECINCT,

"7 P. M., June 13.

[Telegram.]

"TO THE BOARD OF HEALTH:

"Dr. McGinn reports case of cholera in collapse at No. 51 Cherry street."

The case was immediately visited by a sanitary officer residing nearest the dying man, and soon the following dispatch was returned:

"FOURTH PRECINCT,

8:30 P. M.

[Police Telegram.]

"Man at 51 Cherry street is dead, and a policeman is stationed to prevent bedding, &c., being taken away.

The saturated bedding and clothing, and the premises of that emigrant lodging and tippling house were placed under absolute

sanitary orders in less than half an hour from the telegraphic order that replied to the first of these telegrams.

"TWENTIETH PRECINCT,

[Telegram.]

"9:12 A. M., July 1st.

"Dr. Ranney reports a case of cholera at No. 307 West Twenty-seventh street."

This telegram was received at the sanitary superintendent's office, 9:14 A. M., and the proper disinfectants were applied in that house by the disinfecting corps, at 11½ A. M. But in the meantime sanitary inspector Dr. O. G. Smith had visited the sick man, giving full instructions, and remained to confer with the attending physician. The man recovered, and we find the history of his case among the records of the bureau; but the following terse report contains the record which most concerned the public safety. It is given precisely as written on return of that faithful inspector to headquarters. Cholera did not re-appear in that house:

[Telegram.]

NEW YORK, July 1, 1866.

Dr. E. B. DALTON, *Sanitary Superintendent* :

Sir—I have the honor respectfully to report that Dr. Ranney reported "a case of Asiatic cholera at No. 307 West Twenty-seventh street, near Tenth avenue." I received the telegram at 9:14 A. M., and proceeded to the house. I found Patrick McCabe had been taken sick early in the morning with vomiting and purging of a watery discharge. His voice, at 10 A. M., was feeble, blue and shrunken surface, cold and clammy exudation from the skin, cramps in muscles of arms and feet. Vomiting had ceased before twelve, and re-action seemed to be established. No purging or vomiting at 1 P. M. The premises were disinfected, as the house and surroundings were in a bad sanitary condition. The house is a two story wood frame building, two families on a floor, not clean. The yard unpaved and dirty. Privy and yard deficient in proper drainage. The neighborhood is poor, crowded, and in a bad sanitary condition.

Respectfully submitted,

(Signed)

O. G. SMITH, M. D.,

Assistant Sanitary Inspector.

Hygeists throughout the world will readily comprehend the merits of such methods of care in cholera, and the reasons for the success that seemed to attend the sanitary work among us last summer and autumn. Cholera might readily have taken ten thou-

sand, or, at the rate of its ravages in St. Louis, thirty thousand victims in the city of New York. But the foregoing records show that only four hundred and sixty (460) lives were sacrificed to the pestilence in all the dwellings of the city, including its shipping at the wharves and its vast floating population; that the total number of victims in the cholera hospitals and the three charitable penal institutions of the three small islands of the East river was seven hundred and fifty-two, and that the sum total of deaths by cholera was TWELVE HUNDRED AND TWELVE.

THE CHARACTER AND CONDITION OF THE RECORDS OF THE EPIDEMIC.

Whatever was written or in any manner noted by the sanitary officers and by physicians in correspondence and reports, has been carefully preserved. The most valuable of the hygienic records are not yet so completely analyzed as to warrant publication in this report. And these, with the records of the progress and experience of the epidemic elsewhere on the continent, must constitute a separate communication to the Board. The hygienic records within the Metropolitan district are based upon a few hundred returns that have been made with great care by physicians and sanitary officers, in accordance with the schedule of inquiries here subjoined :

Daily Report of Asiatic Cholera.—(The form condensed).

SANITARY CONDITION OF THE HOUSE AND PREMISES.																	
1		2		3		4		5		6		7		8*			
Date of first visit.		Hour.		Name of the patient.		Age.		Occupation.		Residence. No. Street.		Floor and height from the ground.		Front or rear. F. R.			
15		14*		13		12		11		10		9		8			
Was surface-filth, garbage, or surface-water observed about the premises.		Has a cesspool, a surface-pit, the yard, or surface about the house received any of the cholera discharges? Which? What has been done, or is ordered to be done, with the soiled garments and bedding? [c. p. y. floor, &c].		Do they connect directly with street sewer? Are they well flushed and disinfected?		As to location and cleanliness of the privies and water-closets.		As to unobstructed house drainage.		As to ventilation and light. [Good, bad].		As to cleanliness of rooms. [Clean, neglected, filthy]		As to unobstructed house drainage.		As to location and cleanliness of the privies and water-closets.	

* Single cases, when of special importance, may be allowed to fill up such portion of spaces as may be necessary. Abbreviations can be used as in Nos. 8 and 14.

Report, &c.—Continued.

CLEANSING.		PHENOMENA AND RESULTS OF THE DISEASE.																					
16	What disinfection and cleansing of premises were ordered, and what executed.	17	What is known of the beginning and prevalence of diarrhoeal diseases in this house and neighborhood this season? Now?	18	Day and hour of commencement of this attack?	19	Has there been a premonitory diarrhoea, or any history of diarrhoea, or any other symptoms, give the number of hours of such symptoms.	20	Day and hour of the beginning of rice-water discharges.	21	Day and hour of the beginning of cramps.	22	Day and hour of the beginning of collapse.	23	If death ensued, give date and hour.	24	Date of beginning of convalescence.	25	Dates and facts concerning the consecutive fever, or other sequelae.	26	Nature of treatment and remarks thereon, as regards preliminary diet, leeches, the algid stage and the consecutive fever—separately.	27	To what extent were the functions of the kidneys suspended, and did uræmia supervene? How long continued?

No. of case in report.

10
9
8
7
6
5
4
3
2
1

* Replies to the questions from 24 to 27, inclusive, may be omitted in any case on which a subsequent report should be expected.

Report, &c.—Continued.

ETIOLOGY.

28	Source and quantity of the water drunk by the family.	29	Mention in the order of their probable importance the localizing causes of the disease as observed by you.	30	If the infection was received, or believed to have been received, from some other place, or person state the facts.	31	Particularly designate what you regard as the predisposing, and what the exciting causes of the case or group of cases here mentioned.	32	What disposition was made of the diarrhoeal discharges from the sick? How disinfect-ed?	33	State any facts which show whether the disease is spreading or under control.	34	What nuisances or localizing causes of diseases in the locality should be removed?	35	What number of persons in the family? What number in the house? <i>F. H.</i>	36	Name and residence of other persons who have been with the patient or in the place in such manner as to require sanitary care of them.	37	Name and residence of attending physician, or of the officer making this report.
----	---	----	--	----	---	----	--	----	---	----	---	----	--	----	--	----	--	----	--

No. of case in report.

10 9 8 7 6 5 4 3 2 1

There are many questions of vital interest relating to the recent visitation of cholera to this district which need now to be very deliberately examined. The medical profession and the sanitary officers of the cities and towns which cholera has recently visited, must join in the duty. Throwing together this preliminary report, without waiting for conference with fellow-laborers, except those immediately about us, we have ventured only upon well asserted facts that are based upon the records of this Bureau and the daily observations and experience of the sanitary officers. And it is a pleasant duty to state, that at the conclusion of all this watchfulness and work of the Board of Health against cholera, there is not, so far as known, a single exception to the fact, that the medical officers have closed their share in this sanitary labor, with full belief in the necessity and excellent results of means and methods of prevention and control, that were from the first adopted in this warfare with the epidemic the past season. It has fallen to the writer's lot to know how faithfully and with what results, the work of the Sanitary Inspectors and their Superintendent was performed. This record of the epidemic contains the testimony by which they will not hesitate to let the result of their efforts be judged.

DISINFECTION.

Before proceeding farther in the record of the epidemic, it is necessary to make a statement of the principles and methods of disinfection that were largely adopted in the Metropolitan district.

The Registrar having been charged with the duty of preparing instructions upon this subject at the outbreak of the epidemic, this statement will be mainly an abstract of the several brief specifications that were published from time to time after the first of May.

Principles of Disinfection.—In the preceding section of this report, the facts relating to the laws and progress of cholera infection present the basis of the principles upon which the destruction or disinfection of any of the infective causes of cholera must depend. As soon as the exact methods of investigation concerning the propagating causes of cholera epidemics in 1849, 1854 and 1859, had resulted in the logical conclusion that the chief direct cause of cholera propagation resides in the diarrhœal and vomited fluids of infected persons, whether in collapse or suffering only the epidemic choleraic diarrhœa, it became a function of modern chemistry to apply its powerful resources, not only to the work of destroying these *infective* excreta of the sick upon the soiled cloth-

ing and in vessels and privies, but to the difficult task of disinfecting the drains, sewers, foul heaps, and the very ground and water when contaminated with this subtle ferment poison.

But previously to this advanced and definite deduction from scientific researches, the fact had been observed in every recurring visitation of cholera that by thorough scavenging, cleansing, drying, and arrest of all fermentive change in the putrefactive materials and ground-surface in towns, and within or about dwelling-houses, the incursions of cholera could usually be prevented or its ravages restrained. Again, it had been frequently found true that prompt and invariably faithful care of every case of cholera at its outbreak in a town or neighborhood was followed by complete arrest of the local epidemic; but the full import of such results was not until recently understood with regard to the truths we have presented in the preceding section of this report. In short, the first deduction to be drawn from the total variety and sum of all experience in efforts to mitigate the ravages of epidemic cholera, may be legitimately stated as follows: Whatever destroyed and whatever diminished the cholera excreta, whatever agencies prevented the earth and the water used for drinking from becoming contaminated by the soakage of those excreta, and whatever agencies cleansed and deeply dried the earth in the vicinity of dwellings, have everywhere been regarded as the essential means of mitigating the ravages of cholera.

The progressing demands and appliances of sanitary science went beyond such general and vague, though practical and just conclusions. But it was not until the results of the more exactly defined experiences and researches in the epidemics of 1854, 1859 and 1865 in Europe had been logically analyzed and compared, that this most valuable of all conclusions was reached, namely: That the diarrhœal excreta of the sick when impregnating the soil, the drinking water, or any kind of decomposing matter, especially that of privies, cess-pools, sewers, drains, and the ground about dwelling houses, constitute the positive, the chief, and, for aught that is yet known, the only means of propagating and spreading Asiatic cholera.*

*The following abstract of notes submitted from this Bureau, by request of the President of the Board present, at a single view, the leading principles of cholera prevention:

Preventable Causes of Epidemic Cholera.—The preventable causes of cholera are believed to depend upon two essential factors, viz: First, the fluids discharged from the stomach and bowels of the sick with cholera or any kind of choleraic diarrhœa; second, local conditions contaminating the atmosphere of the drinking water. All localizing

To destroy, or, at least, to neutralize and control the infective power of the peculiar excreta of the cholera sick, at once becomes the first duty of the physician and the sanitary officer. Chemistry has been successfully invoked for this work, and every branch of sanitary engineering and domestic hygiene contributes its agency to the success of the task of absolute purification and protection from cholera poison.

This problem of disinfection is not as simple in practice as it would appear to be in this statement of it in the form of scientific propositions. It is really a complex and very exact work of hygiene, involving an extensive knowledge of all known conditions of cholera propagation, and of all known or available resources of sanitary science. The degree of success in the practical undertaking will vary, as the degrees of completeness and accuracy vary, in the application of these preventive agencies. And the fact needs to be known, that a vague and inexact dependence upon disinfecting substances and methods, may become a snare and a fallacy which would result in disappointment and confusion.

The remarkable yet somewhat variable degree of success that has attended the work of special cleansing and disinfection in the sanitary service of the Metropolitan Board of Health, the past

causes should be removed before cholera comes, and they must be controlled by cleaning and antiseptics, whenever it is present. The infective fluids that are discharged by the sick, whatever the period of the illness, must be quickly and entirely destroyed, or be specially and permanently disinfected.

Cholera Infective.—The conclusion of medical knowledge relating to the question of the specially infective agency of the "rice water" and diarrhoeal discharges are well stated, as follows: "It appears to be characteristic of cholera, not only of the disease in its developed and alarming form, but equally of the slightest diarrhoea which the epidemic can produce, that all matters which the patient discharges from his stomach and bowels are infective, and that the patient's power of infecting other persons is represented almost exclusively by these discharges; and that, however they are comparatively non-infective at the moment when they are discharged, but afterward, while undergoing decomposition, these fluids acquire their maximum of infective power; that if they be cast away without previous disinfection, they will impart their own infective quality to the excremental matters with which they mingle in filth-sodden earth or in depositories and conduits of filth, and to the effluvia which those excremental matters evolve; that, if the infective material by leakage or soakage from drains or cess-pools, or otherwise, gets access, even in the smallest quantity, directly or through porous soil, to wells or other sources of drinking water, it can affect, in the most dangerous manner, very large volumes of the water; that the infective influence of choleraic discharges attaches to whatever bedding, clothing, towels, and like things that have been imbued with them, and renders these things, if not disinfected, capable of spreading the disease in places whither they are sent for washing or other purposes; that in the above described ways, even a single case of disease, perhaps of the slightest degree, and perhaps quite unsuspected in its neighborhood, may, if local circumstances co-operate, exert a terribly infective power on considerable masses of population."

season, strongly confirms the belief that the degrees of exactness, completeness, and faithfulness in such sanitary work by medical officers, will be found to constitute the actual measure of absolute sanitary control and triumph over the propagation and spread of the epidemic. To the sanitary superintendent, the staff of sanitary inspectors, and the disinfecting corps, the success of this work is a just complement. In subsequent sections of this report, the practical lessons of this epidemic, not only in this district, but in other cities and other countries, will appear in the form of authentic records.

CHOLERA DISINFECTANTS, AND RULES FOR APPLYING THEM.

Immediately upon the arrival of the steamship *Atalanta* with its company of cholera sick in the bay of New York, in November, 1865, the author of this report, by request of the citizens' council of hygiene, prepared a memorandum on preventive measures against the epidemic. The following paragraphs from that memorandum concisely embody the leading fact concerning cholera disinfection:

"Let the excrementitious matters from the sick be disinfected in the vessel soon as voided, by means of carbolate of lime, sulphate or proto-chloride of iron, coal tar, carbolic acid, or permanganate of potash, and let no person directly use the privy into which such materials are emptied, while cholera is prevailing. Wherever practicable, let the evacuated matter be deeply buried in the earth, and immediately covered with quick-lime or coal-tar, and gravel.

"Let all the vessels and clothing that are used by the patients, be immediately cleansed with boiling water and soap, or alkaline chlorides or permanganates.

"Preserve the utmost degree of personal cleanliness of the sick and of their attendants."*

The whole problem of disinfection of the cholera excreta may be stated thus: (a) to prevent or arrest the infective fermentation and change of the cholera discharges; (b) to destroy or permanently neutralize and control them. This is a simple and most important undertaking, and its complete success can only be predicated upon a complete and permanent grasp of all the physical agencies that are concerned in the processes that finally give to the

* Report of Council of Hygiene on *Preventive Measures against Cholera*, page 42.

cholera excreta a pestilential force. The subjoined abstract of notes upon disinfectants is extracted from the written statements that were laid before the Board of Health at the beginning of the epidemic, and though they were too hastily prepared to be above criticism, they belong to the records of this bureau, and to the history of the Board's successful conflict with the pestilence :

DISINFECTION AND DISINFECTANTS, AS ADVISED BY THE METROPOLITAN
BOARD OF HEALTH.

USES I. To destroy or neutralize the offensive gases and products of putrefaction.

II. To prevent fermentation and putrefaction.

III. To destroy all infection and infective processes in the specific contagions and infections.

1. Sulphates of iron and zinc; chlorides of manganese, zinc, and iron; chlorine, chlorinated soda and chlorinated lime, carbolic acid and the coal-tar preparations, are the most available deodorizing disinfectants.

2. Fermentation and all putrefaction will be most effectually prevented by carbolic acid and coal-tar preparations, and be aided by any of the metallic salts above mentioned.

3. Any of the metallic sulphates and chlorides named above, the carbolic preparations and the hyposulphites of lime and soda, are the most reliable. For practical purposes, saturated solutions of the sulphate or the proto-chloride of iron, and any appropriate form of carbolic and coal-tar preparations, are cheapest and most effectual.

DETAILS OF ADVICE IN THE APPLICATION OF DISINFECTANTS.

To absorb moisture and putrid fluids, use fresh stone lime, finely broken; sprinkle it abundantly on the place to be dried, or for damp rooms, place a large number of plates filled with the lime powder. Whitewash with pure fresh lime, and not with kalsomine.

To absorb putrid gases, use charcoal powder. The coal must be dry and fresh, and should be combined with lime. This excellent compound is the "calx powder."

To give off chlorine, to absorb putrid effluvia, and to stop putrefaction, use chloride of lime, as lime is used; and if in cellars and close rooms the chlorine gas is wanted, pour diluted sulphuric or muriatic acid upon your plates of chloride of lime occasionally, and add more of the chloride.

To disinfect the discharges from cholera patients, and to purify

privies and drains, dissolve ten pounds of copperas in a pailful of water, and pour a gallon or two of this strong solution into the privy, water closet or drain, every hour, if cholera discharges have been thrown into those places; but for ordinary use to keep privies from becoming offensive, pour in a point of this solution into every water closet, pan, or privy seat every night and morning. Bed-pans and chamber vessels are best disinfected in this way, by a teacupful of the copperas solution. Add the same quantity of carbolic fluid (diluted carbolic acid) or coal-tar powders, to insure permanent disinfection. Chloride of zinc, chloride of manganese, or proto-chloride of iron may be substituted for the sulphate of iron.

Permanganate of potassa may be used in disinfecting clothing and towels from cholera and fever patients during the night, or when such articles cannot be instantly boiled. Throw the soiled articles immediately into a small tub of water, in which there has been dissolved an ounce of permanganate salt to every two gallons of water, until the clothing is boiled, and see to it, that the permanganate salt or solution is added in just sufficient quantity to keep up a purple or red color in the water that covers the clothing. A pint of "Labarraque's solution of chlorinated soda" may be used for the same purpose in the tub of water, if the clothing is to be very soon boiled, but must not be trusted for permanent disinfection. Either of these solutions may be used in cleansing the soiled parts of the body of sick or dead persons, and may be used in bed-pans, &c. The permanganate solution will instantly disinfect and deodorize whatever it touches; but its action continues only while it gives a purple or reddish color.

Carbolic acid, and the coal-tar disinfectants are the most efficient and permanent antiseptics. The crystalized acid (costly) will dissolve in one hundred times its own weight of water. A table-spoonful of the solution will disinfect a chamber vessel. The fluid acid (cheap), seventy per cent. strength of crystalized, is most available for common use. Dilute it in 25.50 or more parts of the iron solutions, for fluid use; or in fine quick lime or saw-dust, for use in foul surfaces and heaps.

To disinfect discharges from cholera patients, privies, water closets, garbage tubs, stables, and foul heaps, or surfaces, use the strongest of the coal-tar or carbolic powders, which are powerfully antiseptic. Those that contain a large amount of some proto salt of iron, and the most carbolic acid, are best. For disinfecting

cholera, always use one of the soluble salts of iron, or zinc, as mentioned in this memorandum, whatever else is employed.

Never use chlorine, chlorides, or the permanganate of potash with carbolic acid disinfectants.

Let closets and bed-rooms be cleaned, dried, and ventilated. Beds and bedding must be frequently ventilated in the sun.

Whatever soiled clothing and bedding can be boiled, should, if possible, or soon as removed, be thrown into boiling water, and be kept boiling an hour or two. While waiting the boiling, keep all the cholera-soiled clothing covered in the disinfecting permanganate water, or, if that is not at hand, use the chlorinated solution. Whatever articles have received the infective matter of cholera, and cannot be immediately disinfected by such means, or by sulphurous fumigation, should be destroyed by fire.

Let it not be forgotten that all the discharges from the bowels and the stomach of the cholera sick, must be immediately disinfected by the means specified for the purpose in this memorandum.

Never cast the discharges from the sick into a privy or upon the surface of the ground, but into some privy or water closet that is not for the time being frequented, or into a specially prepared little pit. And whether cast into a privy, an earth-pit, or elsewhere, the choleraic discharges, at every stage of the disease, from the first diarrhœa to the final collapse, must be disinfected as soon as voided, and be impregnated with destructive chemicals when cast away.

Fumigation of Infected Houses.—In any room, house or ship, where the infection of cholera exists, or is liable to exist, after cleansing, fumigation should be practised with sulphurous acid gas, by burning a few ounces of sulphur upon a dish of red-hot embers, or with nitrous acid fumes, by pouring three ounces of concentrated nitric acid over an ounce of fine copper shavings, or by heating a mixture of nitrate of potassa and sulphuric acid in an iron or porcelain dish; or with chlorine gas (of little use in cholera), by mixing a quart of muriatic acid and a pint of water, and pouring it upon a pound of finely powdered black oxide of manganese, or by any other methods of evolving this gas. Sulphurous acid gas is the most effectual and the most easily applied of all the agents of fumigation. Before fumigation begins, let all chimneys and windows be closed; as soon as begun, let the person on duty withdraw from the place, close all the doors, and keep them

closed for twelve hours. Then open every window, door and aperture, and keep open for successive days and nights.

There is no substitute for cleanliness and ventilation. To protect from cholera, attend to these sanitary duties, and also destroy by chemical agents the choleraic discharges.

Guard against Impure Drinking Water.—To test for any organic impurities in drinking water, proceed as follows: Make a solution of chemically pure permanganate of potassa, eight grains to one ounce of distilled water. Into a half-pint of the impure or suspected water, in a goblet or a tumbler, put one drop of the red solution; if the red tint disappears from the glassful in half an hour, add more of the solution. For every drop that loses its color in the half-pint, there will be found to be from one-half to two grains of putrid organic matter in the gallon of that water. To purify such water, if it must be used, drop in the permanganate until the red tint remains in the water.

The subjoined instructions were issued for cleansing and disinfecting the remains of the dead:

TO SEXTONS AND OTHER PERSONS IN CHARGE OF THE UNBURIED DEAD.

Cleansing.—In cleansing the surface of the corpse, especially the parts most soiled by discharges, use the solution of chlorinated soda (Labarraque's solution, of the shops), a pint to two quarts of hot water. A solution of chloride of lime, made by straining or decanting a gallon of water into which a pound of that substance has been thrown, answers the same purpose. This cleansing is required for the whole person in every case of death from cholera, fever, scarlatina, or small-pox. Cloths, sponges, towels, &c., employed about the dead, must be instantly burned or boiled.

Disinfection.—Fill a large wad of cotton or fine shavings with two pounds of coal-tar powder, or chloride of lime, and place it beneath the hips; and, in case of cholera, place much more of this kind of absorbent material beneath the corpse to absorb and disinfect the purged fluids that may flow.

Directions in the Family.—Whatever disease has caused the death, order every garment and cloth that was used upon the dead person, and in cholera and fevers, whatever was about the person or was soiled during sickness, to be immediately boiled, or, until boiled, to be kept in one of the disinfecting solutions. Ventilate every room and closet upon the floor where a death has occurred. Keep windows and fire-places open for several days.

Burials.—The dead of cholera should be interred as soon as practicable, and always within thirty-six hours after death.

As published at various times, in separate or consolidated memoranda, and more especially as copied and sent forth to the public by the daily newspapers in the Metropolitan district, the foregoing instructions and homely explanations became household precepts. To the quick intuition of the daily press in grasping the essential questions that concern the popular mind, is largely due the practical success that attended the effort to render such instructions effectual beyond the narrow limits of the medical staff and disinfecting corps of the Board of Health. Every newspaper encouraged and directly aided this work.

With a few practical suggestions, we conclude this review of the methods and instructions for cholera disinfection:

First. To insure the certain and invariably successful disinfection of the cholera poison, it is necessary to destroy all the organic matter of the excremental matter of the sick as it is voided from the body.

Second. To insure such success in the care of the evacuations from the cholera sick, it is necessary to maintain such a system of medical observation and house-to-house inquiry and hygienic police, as will discover and provide suitable sanitary care of every person who suffers even the premonitory diarrhœa. The measure of completeness in such preventive work is found to be the real measure of success in the war against the epidemic.*

* In confirmation of this conclusion, the experience of sanitary inspectors in this district has given abundant evidence. This is the deliberate conclusion of every intelligent medical officer of the Board; it was reiterated throughout the epidemic season, in homely language, by the medical authorities and by the press. Voluminous testimony on this subject has very recently reached us from other cities and other lands. The following brief extracts from this testimony give the decisive points in the practice of cholera disinfection.

The Medical Board of Bristol, England, makes the following statement, dated November 1, 1866:

The first case of cholera in the city of Bristol occurred April 23d, in a man who arrived directly from Rotterdam. The last occurred on the 24th of September. "Between these dates, and with a clear interval of three months between the first and second cases, it appears that forty-five cases of cholera and choleraic diarrhœa of a specific character have been reported; twenty-seven died and eighteen recovered. The disease appeared in isolated cases, at intervals, in twenty-five different places, and affected twenty-eight different houses. The points wherein the epidemic appeared, are scattered pretty equally over the district, within a circle of the most distant ones. In only three cases did the disease extend to the adjoining house, and it is the opinion of the medical inspector that this arose from the first case in each of these places not having been reported at an earlier period for the application of preventive measures. Fourteen cases have been traced to infection from other places where the disease prevailed in an epidemic form; and it is more than probable that the other cases were communicated in a similar manner, although as yet the medical inspector has not been able to trace the communication.

Third.—An ample and constant supply of the requisite disinfectants and facilities for disinfecting and cleansing.

“When the disease re-appeared, the measures considered necessary to prevent the spread of the epidemic, were taken in all the early cases by your officers, under the instructions of the medical inspector. Wherever a case of cholera appeared, all the drains and sewers communicating with it were charged with sulphate of iron or other chemicals by the officer of your Board, and all the sewers in the low levels were kept so charged until the end of September.

“In consequence of this, none of the sewers or drains became contaminated with infection, no case of the disease having been traced to this source. The measures adopted appear to have been uniformly successful in arresting the disease at each point, irrespective of the state of the weather, which during the occurrence of the earlier cases was dry, and afterwards wet.”

Concerning this instructive experience of the crowded city of Bristol, the learned hygienist, Dr. William Budd, of Clifton, near Bristol, writes to us as follows: “This success, you will rejoice to hear, continues unbroken to the present hour. It is, in fact, absolute. Since the beginning of April, cholera has cropped out more than thirty times in Bristol; for the most part in very bad localities, and yet in no one instance has the disease established itself. Out of the whole thirty, there are but two in which a second case has occurred in the same house. Not one attendant upon the sick has been attacked. We are inclined to attribute the very favorable result of our measures to our having, from the first, acted on the principle of forestalling the evil, if possible. Soon after the occurrence of the first case, placards were distributed over the city, urging all persons to disinfect their privies twice a day as long as cholera may continue rife in England. In order to the better execution of this measure, a band of women has been appointed—twenty-two women are, at this time, so employed—who visit, daily, allotted districts, and who do this work with their own hands, or see that the poor do it. All the great employers of labor have been urged to disinfect the latrines in their several works at least once daily.”

The Health officer at Leeds, where cholera has been kept in check, reports to the Registrar-General as follows: “The medical attendants engaged to treat and take charge of the few cases of Asiatic cholera which have occurred in Leeds, have caused the excreta to be immediately disinfected, and the inspectors employed by the Town Council have also fully distributed disinfectants, not only in the middens, drains or gullies where cholera dejections might have been thrown, but also throughout the town. The officer of health has personally visited every house where a case of cholera has been reported to have occurred, and caused the bedding and linen to be destroyed. The linen and bedding destroyed have been immediately replaced by the Town Council. No deaths from cholera occurred last week in Leeds.”

Dr. Evans, Health Officer in the Strand district, London, reports thus to the Registrar-General, on the 10th of September: “In nearly every instance of a so-called outbreak of cholera in this district, I have succeeded, upon close investigation, in tracing the importation of the disease, either directly or indirectly, from infected localities. Once, however, carried into this district, the malady has, in more than one instance, spread to other inhabitants; but by the daily use of carbolic acid in large quantities, and other disinfectants, used not merely for watering the streets and flushing the public urinals, water-closets and sewers, but also regularly and daily applied, under competent medical supervision, in every house in which cholera or diarrhoea has occurred, anything like an extensive spread of the disease has been completely arrested.”

Dr. Buchanan, Health Officer of St. Giles, London, reports as follows:

“In every case of choleraic diarrhoea, disinfectants, with a paper of instructions for their general use, are liberally supplied; and at the cholera-hospital every discharge from a cholera patient is instantly disinfected.

“Every house in which a cholera case occurs is visited by the medical officers and the sanitary inspectors of this Board. Every room in which a cholera patient has lain is thoroughly cleansed and disinfected by the servants of the Board; and the privies, drains and dust-bins are similarly dealt with. All articles of bedding or clothing, soiled by

The organization of a disinfecting corps as a branch of sanitary service, by the Board of Health, has practically illustrated the view we have taken of these conditions of success. Like the band of trained officers and women in Bristol, England, as mentioned upon the preceding page, that corps has been an essential aid to the sanitary superintendent and inspectors.

Quantity and kind of disinfectants which are required for common use.—Recent reports from Professors Pettenkofer and Wunderlich, from Dr. Muhlig, of Constantinople, and the especially excellent ones by Dr. Angus Smith, Mr. Crookes, and Professor Rolliston, as well as our own experience,* fully confirm the confidence we have placed in the crude sulphate of iron and carbolic acid, for use upon the surfaces or in the vessels that receive the cholera excrement. There are many other chemical agents that can control or destroy the infective property of the excremental matters, but these are the *most available*, because at the same time the *cheapest and most effectual*. Further details are not required upon this point. But, let it be borne in mind by all sanitary authorities, that the object of all methods of cholera disinfection, is to *destroy or to hold in perpetual inactivity* the excreta of the sick and the sources of organic putridity, wherever the excrement may be cast away. The saturated solutions of sulphate of iron and carbolic acid, when employed jointly, or in the order here mentioned, most certainly accomplish such disinfection, when properly applied. They are our best and cheapest antiseptics.

cholera discharges, are destroyed, and only in exceptional instances disinfected; and all this action is efficiently done.

“Linen and beds destroyed are immediately paid for, or, in some few cases, replaced by the authorities.

“Upon recent inquiry, it appeared that out of twenty instances, where the first cholera case had been removed, cholera had attacked a second person in the same house once only; whereas, in some fourteen instances where the first patient was not so removed, it had happened seven times that a second or a third person was attacked in the house, in spite of all the disinfection that could be done by the authorities.”

The Registrar-General of Great Britain writes as follows, November 5th:

“The disinfection of houses in which deaths by cholera have been registered, is still proceeding, and if the operation is performed with skill, care and efficiency, the decline of the epidemic will go on at a still more rapid pace.

“Professors of chemistry sometimes fail in their comparatively simple experiments; how much more likely is disinfection to fail in the hands of ignorant people. It should be performed by officers properly instructed under medical supervision.”

*Some of these learned hygeists have duly acknowledged the contributions that we have made to this branch of practical hygiene. It is due to the learned gentlemen above named to state, that to the separate, but entirely harmonious conclusions which they and their respective governments have promulgated, the world is mainly indebted for the scientific labors that have demonstrated the vexed questions of disinfection.

Boiling, and high steam heat, will most speedily and effectually disinfect foul clothing. The floating hospital has testified to this fact, these eight years past. But all kinds of clothing and surfaces soiled by the cholera fluids, require *antiseptic* care until they are washed. In the English towns, carbolic acid is employed for this purpose, although it is apt to destroy the fabrics, as it is but sparingly soluble (about one per cent., only, in water). The permanganate of potassa, is both theoretically and practically, the best and most economical, for it does not impair the fabrics it touches, if properly diluted, while, at the same time, it gives a *color test* of its effective presence.*

Chloride of lime, and chlorinated soda solutions, will unquestionably hold the cholera poison in check for a time, but we have seen very decided proofs that their disinfecting power is transient and unreliable.

Tests for ascertaining the presence of a sufficient and controlling amount of the disinfecting agents in privies, sewers and infected grounds.—The statement by the Sanitary Superintendent, Dr. Dalton, in his report on the executive service of the Board of Health, shows that the disinfecting men were directed to use the chemicals in large, yet definite quantities.†

The rules of disinfection first published by the Board remain unchanged. Experience and the testimony of all good authorities the past season have proved them correct and sufficient, if applied with faithful precision. But until extensive observation and many trials had given us all the elements for deciding upon tests, we confess we had much anxiety to learn by what tests we could define the presence, at any time and in any place, of a sufficiency of the chemical agents.

1. *The test for the presence of sufficient sulphate of iron.*—As the solutions of this copperas salt give an "acid reaction" when tested with litmus, and especially as it is known that the putrid ammoniacal gases and the debris of organic decompositions have an alkaline reaction, Prof. Pettenkofer has proposed that where there exists any reason for chemical testing, we should resort to the simple blue litmus test for the acid reaction that reddens the

*I am happy to state that while the present epidemic has been rife in Central Europe, German chemists have published methods for cheap and speedy preparation of the *permanganate*, reducing the cost to less than half the trade prices. This is a great desideratum, as the costliness of this most prompt and available oxidizer has limited its prophylactic applications.

† See Report of Sanitary Superintendent, pages 17 and 18.

test paper. But in their pamphlet of Cholera Regulations, published during the Austro-Prussian war a few months ago, Professors Pettenkofer, Wunderlich and Griesenger, unite in recommending specific quantities of iron and of carbolic acid, for privies and daily use. The following is a brief abstract of the rules they have laid down for army and domestic observance:

Sulphate of iron (or of zinc).—Use twenty-five grammes (four-fifths of an ounce) dissolved in water, in privies, or stools of each person daily; and to disinfect masses of excrement and filth, or infected ground, pour over them such quantities as will saturate and afterwards show that the foul substances have an acid reaction by the iron.

Carbolic acid.—Remember, if a mass of excrement is once made to show the acid of copperas, it can be permanently kept in that disinfected condition by a small quantity of carbolic acid. The quantity of the crude fluid acid required to insure perpetual disinfection, if used day by day, will be for each person three or four grammes (about a teaspoonful) of the seventy per cent. acid, dissolved in three or four ounces of water every day; or use in this proportion for any mass of excremental matter.*

* The Cattle Plague Commissioners of Great Britain succeeded last year in procuring such an application of the best resources of science in the testing of disinfectants, and especially in exactly defining their nature and uses, as never before was attained. The special reports of Dr. Angus Smith and Mr. Crookes on this subject are so applicable to epidemic cholera as well as to the cattle plague, that their conclusions may be consulted with advantage by all who wish to keep pace with the particular branch of hygiene concerned in disinfection. Dr. Smith speaks as follows of infections: "I hope I do not go too far when I suppose a class of diseases caused, *first*, by gases, not putrid but injurious, easily diffused into the air, and more or less soluble in water; *second*, by vapors, heavy and capable of falling, especially in cold air, capable also of being taken up in the moisture of fogs; *third*, of putrid or decomposing substances or ferments; and, *fourth*, of organized bodies or germs in various stages. Disinfection is the destruction of one or all."—*Report to Cattle Plague Commissioners.*

Mr. Crookes has set forth very clearly the leading facts of his experience and practical study of disinfectants, in the following statement: "Disinfection, in the widest sense of the term, means the destruction of all substances, either injurious to health, or offensive to the sense of smell, arising from putrefying organic matter, or emanating from diseased animals. * * * * * It may be considered as definitely proved that the vapor of carbolic acid in the atmosphere exerts a special selective power on all minute organisms possessing life. If the contagious matter of cattle plague is possessed of organic vitality, as must be now admitted, it will be destroyed, beyond the possibility of revival, when brought into contact with the vapor. French experimentalists have repeatedly tested the influence of carbolic acid on vaccine lymph. They have employed lymph, both pure and mixed with a trace of carbolic acid. The vaccination with pure lymph was followed by the usual results, but in no single instance was any effect produced by the lymph containing carbolic acid. * * * * * Sulphur fumigation and carbolic acid agree very well together, and somewhat assist each other's action; whereas, oxidizing disinfectants, used either with carbolic acid or sulphur-

To test the atmosphere of drain-pipes, privies, and suspected places.—Test with the red cucuma paper for the presence of ammoniacal or alkaline gas. Places with such gas are not safe.

Chemistry does not withhold its resources from the hygeist, who, first, has ascertained precisely the demand to be met.

And, if it is true, that certainty in disinfection is attained only by exactness in application of means, it is also true that the chemist's precision of knowledge enables him to give the most practical and easily comprehended instruction to the common people. This is seen in the following words of the learned men we are here quoting, and which we now commend to all sanitary officers and persons who are in the presence of cholera:

“In a place where the coming of the disease and its epidemic spread is feared, disinfection should not be waited until the epidemic character has shown itself in some houses or cases. The

ous acid, are inoperative; the energies which should be directed to the destruction of infection being exhausted in neutralizing each other. When dealing with such an overwhelming amount of putrefying and putrescible organic matter as is met with in a farm-yard, it is of paramount importance to economize as much as possible the disinfectant. I have already shown that chlorine and ozone are very wasteful agents. As it is our chief aim to destroy the activity of cattle-plague virus (the destruction of ordinary farm-yard odors being of secondary importance); even sulphurous acid is open to objection on the score of waste; but carbolic acid goes direct to the root of the evil, and acts solely where it is most required, without touching the innocuous dunghill stench. Owing to the power possessed by carbolic acid of arresting and preventing decomposition, it checks the evolution of the offensive odors, and, by retaining the nitrogenous compounds in the manure, it greatly increases its value. At the same time it stops the development in the manure of minute animal organisms, and it has been observed that flies never congregate about dunghills where carbolic acid has been habitually used, whilst the liquid manure which oozes from them is without smell. In stables and cow-sheds the property is of very great importance, both as regards the comfort and health of the animals, especially during the hot summer months. * * * * *

Since this investigation was undertaken, I have made a collection of cases, illustrating the good effect of carbolic acid, in arresting the spread of the cattle plague in various parts of England and the continent. I will not, however, enter into particulars, but confine myself to those cases which have come under my own immediate knowledge. I have not yet met with a single instance in which the plague has spread on a farm where this acid has been freely used.

“*On the Adulterations of Carbolic Acid and their Detection.*—The official recommendations have naturally brought into the market many substitutions for carbolic acid, in which the valuable agent is diluted with cheap inert bodies, whilst the price charged in some cases is higher than that of the genuine article. * * * * * It is by no means difficult to detect the adulterations referred to above. Commercial carbolic acid is soluble in from twenty to seventy parts of water, or in twice its bulk of a solution of caustic soda, while oil of tar is nearly insoluble; but if the amount of carbolic acid be increased, some remains undissolved.

“To apply the tests: “*First*, put a teaspoonful of the carbolic acid in a bottle, pour in half a pint of warm water, and shake the bottle at intervals for half an hour, when the amount of oily residue will show the impurity. Or, dissolve one part of caustic soda in ten parts of warm water, and shake it up with five parts of the carbolic acid. As before, the residue will indicate the amount of impurity.”

disinfection shall not, therefore, as it has been done, follow the outbreak of cholera in a single house, but shall be used before such an outbreak. * * * * *

"If in any house * * * an undoubted case of cholera in a family has already happened, disinfection generally comes too late to prevent evil in that domicile. * * * Yet disinfection should not be omitted in houses where a cholera case has already happened, as it always prevents a further spread of the infection in the house.

"Privies of railroad stations and hotels, ought to be disinfected as long as there is an infection with cholera by intercourse feared.

"The secreting, or non-observation of the first cases of cholera in a place, is one of the greatest evils that can be done; it injures the public more than the most strenuous subsequent efforts and sacrifices." *

These brief rules for disinfection, having been practically incorporated into the regulations which are enforced by the Board of Health, and having been carried into operation in a great number of towns visited by cholera the past season, this public record and quotation of them as originally written and acted upon by us, seems due to the history of the present epidemic. To the quick intelligence of the executive officers of this Board, as well as to the unhesitating decisions of the Board itself, the practical adoption and success of these special methods of public protection was due. And now, after the first onset of the epidemic has passed and its pestilential force has been successfully resisted, as we believe by potent weapons of prevention—it seems proper that the sanitary authorities in this metropolis, should send forth with its report of the epidemic, as well as place permanently upon its records, a concise and practical analysis of the scientific evidence and the lessons of experience upon which are based the present successful methods of sanitary prevention and control of cholera.

Though we may not be able at this moment, to grasp all the problems that stand associated with the origin and progress of this Asiatic pestilence, there is now a very general demand for a full and truthful representation of the practical deductions of experience and hygienic inquiry concerning the means by which the pestilential visitations of this malady may be prevented. We will here endeavor to set forth these conclusions and the reasons

*CHOLERA REGULARITY.—Von Professoren Pettenkofer, Griesinger, and Wunderlich. Munich, 1866.

for them in such order as to show why, and to what extent, the sanitary government in this district, has been warranted in adopting active and exact methods of control over the tangible agencies that are concerned in the propagation and spread of the epidemic that menaced the metropolis and the continent.

The State will rightfully demand such a record as we are now preparing upon this subject, and it may justly ask that the latest and the best resources of hygiene, as proved by actual experience shall not only be faithfully tested, but practically set forth, by the sanitary authorities. The great historian of the "Epidemics of the Middle Ages" has justly remarked, that "The State which founds its legislation on a knowledge of realities, which expects from the physical sciences information respecting human life collectively considered in all its relations, has a right to demand from its physicians a general insight into the nature and causes of popular disease."*

In preceding pages we have endeavored to present as complete a record of the recent visitation of cholera as is practicable at so early a date. The exactness of the record, and the results of the Board's experience in dealing with the epidemic, so far as we can now judge, would seem to exclude all doubt that the conclusions to which the Board and the public have arrived, regarding the utility of specific means of prevention and control of the infection, are in themselves alone logically convincing. But the evidence upon which the sanitary measures of the Board are based, is so decisive and so completely corroborated by all the great hygeists in the world, that these new measures are at once raised from the character of experiments, to the realm of accepted sanitary principles.

The progress of knowledge, in the study of each successive epidemic of cholera, had promised the great results which sanitary science has now reached, and this progress has been as gradual, as it has been sure. While it was lamentably true, that in the great mass of medical writings and sanitary reports, dogmatism and hasty generalizations usurped the place of patient and logical research, the true spirit of inductive medical inquiry was continually approximating a practical and scientific interpretation of the mysterious and subtle characteristics of this most dreaded and fatal of epidemics. He who watched this deliberative and hopeful progress of inquiry by which the present philosophical and triumph-

*HECKER'S *Epidemics*, &c., Introduction to *Sweating Sickness*.

ant results were being reached, was reminded of *Coleridge's* suggestive saying, that "*The position of science must be tried in the jeweller's scales ; not, like mixed commodities of the market, on the 'weigh-bridge' of common opinion.*" Painstaking and comprehensive hygienic inquiries were in progress in three successive epidemics ; sanitary science and the logical study of medical experience advanced by definite and deliberate steps. The problem to be solved was stated in plain terms, by practical men. Its separate propositions were :

1st. By what means is cholera communicable from place to place ?

2d. Having discovered and defined the infective agent, and the conditions that are requisite to the propagation and spread of the cholera poison, let the means for controlling and destroying those essential conditions of its production be definitely ascertained and widely promulgated.

The first great epidemic of cholera had enabled medical observers to define in general terms, the chief local conditions or localizing causes of any unusual prevalence and fatality of this pestilence ; but the exacting necessities of hygiene required that a precise and comprehensive grasp of all the conditions of the propagation and spread of the pestilence should be obtained by scientific researches ; and, until grand conclusions were reached, the hygeist and the physician asked no decisions from the public, but, in the true spirit of the philosophy and the philanthropic objects of sanitary inquiry, all the resources of inductive and deductive science were involved, to solve the problems of cause and prevention.

Upward of forty millions of lives had been destroyed by cholera, in a period of fifty years, before sanitary science acquired exact and positive means for resisting and destroying this pestilence. The great epidemic of 1854-55, had nearly ceased before the first positive statement could be made, that the infectious cause of cholera epidemics had been discovered, and brought within the probable control of human skill. These conclusions were reached at about the same time by widely separated and independent medical inquiries. The mooted question of *cholera infection* received a new and rational statement, and the means of combating and destroying the propagating force of the infective foe and its allies were at once indicated. At that early period, namely, in the summer of 1855, the quarantine hospitals of the State of New York,

on Staten Island, became the first field in America for the practical testing of these new and definite methods.

It was eminently fitting that the Metropolitan Board of Health should not fail to follow up that progressive step, and verify the valuable conclusions that were predicted ten years ago at a secluded, but most important post, now within the Metropolitan District. But here we need to present a brief review of the evidence upon which that first and these last and more conclusive steps were taken, in concert with the great leaders of improvement of sanitary government in Europe. The recognized probability of a more wide-spread and deadly onset of cholera the ensuing summer, requires that this testimony should be so understood as to induce practical convictions and definiteness of action in all men who have any responsibility for the public welfare.

PRACTICAL CONCLUSIONS OF SANITARY SCIENCE, CONCERNING PREVENTIVE MEASURES AGAINST EPIDEMIC CHOLERA. A SUMMARY OF EVIDENCE.

Each successive epidemic of cholera furnished fresh experiences which demonstrated, on the one hand, that the malady was not contagious, in the sense that we speak of small pox contagion; and, on the other hand, that it may be and often has been infectious, and very subtly and persistently so, under favoring circumstances. It had also been found, the world over, that cholera usually killed its victims in groups, within any district or city it invaded, and that the grouping was not exclusively by families or within the circle of persons who visited the sick room, but oftener by localities and areas characterized by localizing causes, of which surface filth, privies, and defective drainage were the chief. The fact had been demonstrated that the most rigid quarantine of all persons prostrated by cholera failed, in most if not in all instances, to prevent the extension of the epidemic; but it was noticed that an absolute cordon or exclusion of all personal communication and ingress had occasionally seemed to be a means of protection. An initial case, or group of cases in a district, seemed generally to precede, by some days, the "explosive" onset of the epidemic; and lastly, the fact was incontrovertible, that the medical profession had ascertained that an epidemic could generally, though with singular exceptions, be controlled, and, in some neighborhoods, be speedily extinguished, by universal medical and hygienic care, with complete cleansing and domestic police of all the cholera

sick, including every case of diarrhœa, however slight and unnoticed in the neighborhood. There were abundant proofs that by some means the malady could be carried from place to place; but, at the same time, such infection was not known or believed to be transportable in clean goods or in clean ships, free from the touch of diarrhœal and cholera excrement. It also had been proved by experience that in well conducted hospitals for cholera the physicians and attendants seldom became its victims; and again, that wherever the cholera sick were neglected, especially where their evacuations were carelessly cast into cess-pools upon court yards, or into the earth privies, or where the saturated bedding and garments of the patients were left uncleansed, the epidemic would generally burst forth with fresh vehemence. The crowded steerage of the passenger ship would be ravaged by the pestilence, while in the lighted and well ventilated cabins upon the upper deck of the vessel, not a case would appear; while the scrupulously scrubbed man-of-war, with cholera on board in port, would put to sea, and in a few days free itself from the pestilence. And finally, upon whatever continent or island the sick with cholera were unguardedly landed, the epidemic was almost sure to make its appearance after a few weeks. Observation the world over had confirmed the belief that cholera followed the highways of travel; that by some undiscovered method, it would rapidly increase and spread; and that it would communicate itself from persons sick, or becoming sick, to places that were free from it until a few days subsequent to the arrival of such persons.* On the other hand, it was not less frequently true that outbreaks of

* In my annual report of the Quarantine hospitals on Staten Island, in 1855, the following remark was made upon this subject: "Proofs of the infectious nature of Asiatic cholera are constantly being presented in all parts of the world where this terrible disease prevails; and that although the opinions of distinguished men in the medical profession are not unanimous in support of the doctrine of the communicability of cholera, there are incontrovertible evidences of its being contingently infectious, and transmissible from place to place." In my report of these hospitals the subsequent year, 1856, the following statement was made: "It will be observed by tables of statistics, that several cases of Asiatic cholera have been admitted to the hospital during the past year. The first cases, three persons in collapse, were received on the first day of June, from Nicaragua. Up to that date no cholera, nor any tendency thereto, had occurred in any of the wards of the hospitals during the year. These persons were placed in a building by themselves, and every precaution was used to prevent any communication with the other wards. On the evening of the 8th of June, the day that the last of this company of cholera patients was transferred to the convalescent ward as cured, the malady suddenly made its appearance in the hospital building nearest that in which the cases of cholera had been provided for, and in less than six hours the first victim died; and during the three succeeding days many of the inmates of the hospital presented the promonitory symptoms of cholera, which were arrested by treatment." See Senate Documents, Albany, 1856 and 1857.

cholera occurred in localities and at times where no historical connection with other places and persons was traced.

The progress of cholera was mysterious and subtle. Theorists had no difficulty in finding facts to support their theories, while medical philosophy simply recorded the facts and promised an ultimate solution of the mystery. The incongruity of the facts was only apparent. They all converged towards the practical conclusions that have finally been reached.

CONCLUSIONS REACHED IN THE SEVERAL EPIDEMICS.

The Epidemics of 1832-34.—Medical observation established the fact that by prompt and universal attention to the diarrhœa—the preliminary stage of cholera—the fatality of the epidemic could be controlled. It was observed, also, that in particular institutions or neighborhoods, such care extinguishes the local epidemic. This was particularly observed in the State's prison at Sing Sing, and in the Bellevue almshouse and hospital in this city. That local filth, foul air, and privies tended to localize the epidemic in its chief centres of prevalence, and that bad personal habits predisposed to the fatal attacks of cholera, were as well known then as now.

Certain events, like that of the outbreak of cholera in the friendly Indians of the Oneida woods the week they had removed and buried from a canal boat, some emigrants that died of cholera, became historical, and so did the fact that the physicians and nurses of the cholera sick seldom suffered harm in their duty. These events were simply diverse, not incongruous.

Conclusions reached in 1848-49.—Precisely the same lessons were taught in this as in the first epidemics. Though a vast amount of observations was placed on record, that record at the time yielded only the result which was set forth in the following candid but erroneous words of the learned medical council of the New York Board of Health: "The cause of the disease exists in the atmosphere * * * * to develop it, however, exciting causes are necessary, and these are found in all those things that tend to disorder the bowels. With regard to the peculiar condition of the atmosphere which predisposes to the disease, we know nothing. Human skill and human agency, therefore, can do nothing in meeting the difficulty." *

* Circular of the Medical Council. See *Report of the Proceedings of the Sanitary Committee of the Board of Health*, in relation to the cholera as it prevailed in New York in 1849.

In all civilized nations the successive epidemics of cholera had begotten deep concern for the protection of the public health. Sanitary science, as at present cultivated, owes its present advanced state to that popular concern and the pestilence that awakened it. That science unceasingly followed up the records of the epidemics and analyzed them. The following points of progress were incontrovertibly gained upon the ground of certainties:

1. That the water of an infected locality, when exposed to soakage or percolation from the ground surface, the cesspools, or the privies in which the excreta of the cholera sick were cast away, would, when drank, be followed by cholera in a great proportion of the persons who used such water. To Dr. Snow, Dr. William Farr, the Registrar-General of England, and Dr. John Simon, of London, the world is indebted for laborious researches and popular instructions on this point.

2. Medical experience *proved* in England and Scotland, that by timely and unceasing watchfulness in searching for and arresting the premonitory choleraic diarrhœa, aided by cleansing of the dwellings, privies, cesspools, and grounds, the local outbreaks of the epidemic could be controlled, and that the exceptions to thorough extinction, where all the sick were thus treated, were always associated with defective cleansing and bad drainage.

In more than one hundred very elaborate reports of the epidemic of 1848-49 we now find ample confirmation of the truths upon which the Metropolitan Board of Health in 1866 has based its methods of sanitary care.

The Epidemic of 1854-55.—More fatal than the preceding epidemic in Europe, and scarcely less so in America, it furnished the opportunities requisite for the great practical conclusions to which all the resources of sanitary science had directed the best-skilled medical labor of learned men. In October, 1854, one of the ablest medical observers published the following concise statement of the results of study in two epidemics: "As the great epidemic which now prevails follows its unchecked course, two great cardinal truths become, day by day, more evident. The *first* is, that cholera is a catching disorder; and the *second*, that the poison is communicated by the discharges of the sick." It had fallen to the lot of Dr. Wm. Budd, of Bristol, England, who published this conclusion and the first convincing argument thereon, to observe a series of facts that led directly to this and to no other logical interpre-

tation. He added the following most useful advice: "Cause all discharges from the persons ill of malignant cholera, or *choleraic diarrhœa*, to be received, on their issue from the body, into vessels containing some chemical agent destructive to organic compounds; and, secondly, by daily and frequently flooding all the next receptacles of these discharges with chemical agents of the same class; and, thirdly, by subjecting sewers and drains, which these receptacles feed, to the same treatment."*

Previous to that first masterly exposition of the doctrine that led to the true methods of prevention, Dr. Snow, of London, had obtained evidence that the excremental discharges of cholera patients seemed to have poisoned certain wells and reservoirs of drinking-water, by soakage through the soil into them. And after the epidemic of 1849 had passed, it was found that the daily records of the Registrar-General's office gave indications that lent strong probability to Dr. Snow's theory. At last it has been proved that such soakage and infection can and does occur.

In the kingdom of Bavaria, the learned medical counsellor to the king, Dr. Pfeufer, called to his aid leading physicians and chemists, including Professors Pettenkofer, Buhl, and Thiersch, to conduct a systematic scheme of sanitary prevention, and skilled research while the epidemic was in progress. The plan was comprehensive and skilfully exact. Its results were of the most practical and convincing character. In November, 1854, Baron Liebig wrote the following synopsis of the evidence, and his views thereon. I deem it a duty to present this testimony in the words in which it was originally given, for he grasped beforehand the grand conclusions that were logically deduced by Pettenkofer, next year, upon the whole evidence.

"The following conditions are found to be connected with the outbreak and existence of cholera:

"1. Houses that are so situated as to have imperfect local drainage, or in which the privies and cesspools are so constructed that the liquids they receive do not pass completely away from the house.

"2. A loose soil under the houses, capable of absorbing the liquids, augments the tendency to the development of the infection when introduced.

*Six Letters upon Causes and Prevention of Cholera, by Wm. Budd, M. D., published in 1854 and 1855, and relating to researches in 1848-49, and 1854.

"3. A general degree of moisture of the soil.

"4. The products of decomposition of human and animal excrements contained in the soil, appear to be the elements that determine the soil's capacity for the infection.

"5. Privies and sinks are especially capable of impregnation with the infection.

"6. The excrements of cholera patients, when decomposing, are a fertile source of the propagation of the disease."

"Prof. Thiersch found," says Liebig, "that the corpse immediately after death seemed to be incapable of communicating cholera; he found the same to be true of all the excreta from the cholera sick; but after a brief period—from two to eight days—the fluids in the corpse and the excreta of the sick acquired contagious and infectious properties." Prof. Liebig concludes: "The poison of cholera is developed in the excremental fluids of the sick after they have left the body; thus, sewers and privies, and all places in which they become mixed with animal matters, *become* real and *active* sources of cholera poison; that the well known preventives of fermentation and putrefaction remove the cause of the propagation of cholera; and that it is the duty of the medical man to employ these preventives, and to determine the extent of their power." *

Testimony concerning the effect of special disinfection in the towns of Bavaria presented instances like these: In the prison of Kaisheim, in Bavaria, the cholera was introduced by an individual who died there, and disinfectants (sulphate of iron, &c.) were faithfully and abundantly employed from the first moment, and not another of the five hundred and fifty prisoners was attacked, though the locality and all conditions favored. In the prison at Ebrach (Bavaria, 1854) this preventive measure was omitted, and fifteen per cent. of the prisoners perished by cholera.

The voluminous scientific and narrative reports upon the epidemic as it prevailed in the different countries, and in the different cities and states of our own country, in 1854-55, contained nothing that invalidated, while they brought much evidence that confirmed the conclusions we have quoted. And these general and aggregate results of the researches in that epidemic, rather than any local or individual observations, are here appealed to, because all the individual testimony, as far as gleaned and analyzed, adds its quota to the same grand result, viz., that the chief factors that make

* Letter from Baron Liebig to Prof. Hoffman, London Medical Times and Gazette, Nov. 18, 1854.

up the sum of causes of epidemic cholera have been discovered and plainly defined, and that the most essential and invariable of all these factors is that which resides in, or is developed into activity by, the excremental fluids of the cholera sick. And further, that both the infective excrement itself and all its local and pestilential aids are believed to be susceptible of control by hygienic means.

But we do not overlook the fact, that there yet remain many doubtful and unsettled questions relating to all great epidemics. and that as regards some of them, there unquestionably are concerned in their perpetuation such cosmical and atmospheric conditions as science has not yet fully explained. And this fact we should here mention concerning the Asiatic cholera, namely, that its epidemic history shows that whenever it has lighted upon the Hindoo and Mohammedan shrine worshippers, fresh from its native haunts, their wallowing filth has given fresh virulence to the infection, and imparted such a deadly power that it has spread with an epidemic force that would seem to give probability to the old doctrine of an epidemic condition of the atmosphere as not only literally true, but also affording evidence that such a pandemic condition may be created by the concentration of pestilential poisons, however generated.*

* Concentrated and excessive disease and sanitary want in any great section of the human family seldom remains entirely limited within the circle of those who first suffer the consequences of such neglect. The ways of nature, no less than the ways of the moral government in this world, assert the reciprocal concern that different classes have in each other's welfare. And it is one of the noticeable results of such aggregation of neglected disease and sanitary want along any great highway of nations, that it breeds a pestilence which can leap all territorial and domestic boundaries, and menace the civilized and favored populations that otherwise were secure from such peril. In such events—and the history of all great plagues is but a series of these natural results of sanitary and social neglects—we may read great laws of epidemics. And this is not poetic justice, but natural retribution by natural laws.

The great teacher of hygiene, whose study of natural laws and exact results in disease, has won for the British Registrar-General's office the regard of statesmen and philanthropists, has uttered words of profound philosophy in the following remarks upon this subject: "All analogy" (says Dr. Farr) "proves that no extensive or permanent degeneration of a race can be accomplished in less than two or three generations. The great change is as slow and insidious as it is certain. It is rarely perceived by its victims, who remain rooted and benumbed on the spot, unless they and the community are aroused by sudden and terrible catastrophes. That angel which, it would seem, it has pleased the Almighty Creator and Preserver of mankind to charge with this dread mission, is the pestilence. Wherever the human race, yielding to ignorance, indolence or accident, is in such a situation as to be liable to lose its strength, courage, liberty, wisdom, lofty emotions—the plague, fever, or cholera, comes, not committing havoc perpetually, but turning men to destruction, and then suddenly ceasing, that they may consider. As the lost father speaks to the family, and the slight epidemic to the city, so the pestilence speaks to nations, in order that greater calamities than the untimely death of the population may be avoided."

—*Report of Registrar-General, p. 97, 1852.*

Events in the progress of cholera in 1859 in Europe, and in 1860-62-63 and '64 in Asia, corroborated the conclusions and established the value of the lessons to which we have referred in the epidemic of 1854-55. It is needless to refer to them further. But in the year 1859 the Quarantine Commissioners for the State of New York were compelled to resort to the substitution of a hospital-ship in place of hospitals on land, and in that floating hulk of the steamship "*Falcon*" were put into operation all the principles of prevention and hygienic police that the experiences of 1854-55 had taught. Having then been charged with that duty, we now record, with peculiar satisfaction, the fact, that until the present hour that ship and everything pertaining to it has remained uninfected by any of the diseases treated in it, though it has been in use eight successive years, and has received all the cholera sick until now. In that floating hulk has the fact been fully illustrated, that, however infectious cholera may be, and however subtle the poison of yellow-fever, they are susceptible of instant and complete destruction. Perfect cleanliness and dryness, plenum ventilation in an unlimited degree, and in all weathers, disinfection of all clothing, &c., in steam-vats, and the proper use of antiseptics, have insured this success. This, like the quarantine hospitals on shore in previous years, added essential evidence to the value of precise and rigidly observed sanitary regulations in guarding against infection; and, from a personal consciousness of the importance of these special examples, I must here be permitted to bear testimony to the faithful manner in which, during the entire period of the experience, the Commissioners of Emigration performed their part in regard to the infection hospitals on shore and afloat; also to mention the intelligent labors of Drs. Gunn, Swinburne, Bissell, and Walser, and the Quarantine Commissioners, that have contributed to this success of the floating hospital. A complete description of the measures we adopted in the latter institution may be found in Senate Document No. 13, A. D. 1860.

Results of Experience in the Epidemic, 1865-66.—Previous to the 1st of May, 1866, we had received voluminous and instructive reports of the progress and behavior of cholera in the Old World last year. Leaping from Alexandria, in Egypt, to Constantinople, to Marseilles, Toulon, and the chief ports of the Mediterranean and the Euxine, the epidemic was studied at every step of its progress, by the ablest medical observers. It was in vain confronted

by quarantines, except where the *cordons sanitaires* were absolutely prohibitory of all intercourse, as was the case on the entire island of Sicily, and throughout the entire coasts and frontier of Greece.

Until the epidemic had spread to Belgium, Saxony and Baden, the improved modes of sanitary care were not generally adopted. Secrecy and popular ignorance constituted the policy of governments and the peril of the people. Panic and terror, and the most injudicious procedures, were indulged in by all classes. But, during the autumn and winter the resources of sanitary science were applied with much success. To Drs. John Simon, William Farr, Edward Parkes and M. Von Pettenkofer, the world again became indebted for devoted and well-directed labors and publications, designed to arouse sanitary authorities to the duty of applying definite means to repress the epidemic. The last named hygeist went into a stronghold of the epidemic in Saxony, and in the two cities of Altenberg and Werden, obtained new demonstrations of the utility of the doctrines he had promulgated in 1854-55. His popular instructions, as published by the German daily press, and his elaborate reports, together with letters from him, are on file in the Bureau of Vital Statistics, and were translated for the use of the Board. Dr. Pettenkofer demonstrated anew that by destroying the infective property of choleraic excrement, and by antiseptics, sulphate of iron and carbolic acid being the best examples of these protective agents, the presence of cholera was rendered harmless in badly exposed localities of its outbreaks. Deeply convinced of the duty they owed to the people of the German States, Professors Griesenger and Wunderlich joined Professor Pettenkofer in issuing a voluntary tract of popular advice, entitled Cholera Regulations. It was issued in immense editions in Berlin, Munich and Leipsig. And we recently have been informed of such success of the sanitary authorities in the German States and in Prussia, as would warrant the conclusion that hundreds of thousands have been saved from the attack of cholera through the influence of the timely instruction thus given, while in Austria more than 200,000 persons have suffered the disease and vast numbers have perished in four months.

In Great Britain the success of preventive measures, based upon the exact requirements of the present knowledge in regard to cholera and its causes, has been such as to remove the last vestige of popular incredulity concerning the doctrines which Doctors

Farr, Parkes, Budd and Simon, had publicly promulgated in the autumn of 1865.

As the evidence relating to the course and prevention of cholera in 1866, in different parts of Europe and the United States, is being compiled for the use of the Board, and for presentation to the Government, I will not burden this report, nor hazard any incompleteness and inaccuracy, by repeating any portion of it in these pages. But the fact should now be stated, that all the evidence we have thus far received confirms and elucidates the practice and the philosophy of the measures which the Metropolitan Board of Health adopted in its care of cholera the past season. In concluding this hasty review of the evidence upon which the Board of Health founded its practice in its sanitary measures against cholera, we can find no language that can more completely and instructively convey to others our own mental convictions and the daily reiterated counsels of this branch of the Metropolitan sanitary service than the following well-considered directions, which we copy from a Circular of Official Instruction, recently issued by Dr. J. Simon, the chief medical officer to the Lords of the Privy Council of Great Britain. These words, coming as they do from one of the profoundest medical philosophers, and the acknowledged leader in sanitary science in Europe, support and enforce in no feeble manner the counsels that have proceeded from the Metropolitan Board of Health in New York the past summer:

“Happily for mankind, cholera is so little contagious, in the sense in which small-pox and typhus are commonly called contagious, that, if proper precautions are taken where it is present, there is scarcely any risk that the disease will spread to persons who nurse and otherwise closely attend upon the sick. But cholera has a certain peculiar contagiousness of its own now to be explained, which, where sanitary circumstances are bad, can operate with terrible force and at considerable distances from the sick. It appears to be characteristic of cholera, not only of the disease in its developed and alarming form, but equally of the slightest diarrhoea which the epidemic influence can produce, that all matters which the patient discharges from his stomach and bowels are infective; that the patient's power of infecting other persons is represented almost or quite exclusively by those discharges; that they, however, are comparatively non-infective at the moment when they are discharged, but afterwards, while undergoing de-

composition, acquire their maximum of infective power; that, if they be cast away without previous disinfection, they impart their own infective quality to the excremental matters with which they mingle, in filth-sodden earth, or in depositories and conduits of filth, and to the effluvia which those excremental matters evolve; that, if the infective material, by leakage or soakage from drains or cesspools, or otherwise, gets access, even in the smallest quantity, directly or through porous soil, to wells or other sources of drinking water, it can infect, in the most dangerous manner, very large volumes of the water; that the infective influence of choleraic discharges attaches to whatever bedding, clothing, towels, and like things, have been imbued with them, and renders these things, if not disinfected, capable (as the cholera patient himself would be capable under the same conditions) of spreading the disease in places whither they are sent for washing or other purposes; that, in the above described ways, even a single case of disease, perhaps of the slightest degree, and perhaps quite unsuspected in its neighborhood, may, if local circumstances co-operate, exert terribly infective power on considerable masses of population. 'If local circumstances co-operate,' however, is the stated condition for that possibility; and it will be observed that the essence of the sanitary precautions which have been recommended to nuisance authorities and others, is to annihilate those 'local circumstances.' The choleraic infection does not seem able largely to injure any population unless a filthy state of things be pre-supposed. It is pre-supposed that the atmosphere of the drinking water of the population is impure with the most loathsome of impurities; that the infective material has had opportunities of action which decent cleanliness would not have afforded it; that, in efficient drains or cesspools, or other like depositories, it has had time to develop its own infective power, and to render other stagnating filth equally infective with itself; and that, from such foci of infection, the disgusting leaven of the disease has spread, in air or water, to be breathed or swallowed by the population. In this view of the case, it will be understood that works of sewerage, house-drainage, and water-supply, properly executed and properly used, give to town populations an almost absolute security that cholera, if introduced among them, can have no means of spreading its infection. And equally, it will be understood, that in the absence of those permanent safeguards, no approach to such security can be got

without incessant cleansing and disinfections, or without extreme vigilance against every possible contamination of drinking water."

"Board (the Local Board of Health of any Parish) to Provide Dispensary Stations.—The Board shall provide a sufficient number of dispensaries, to be open night and day, at convenient places within their district, with an adequate supply of such medicines, medical appliances, and disinfectants, as their medical adviser shall recommend, and with a legally qualified medical practitioner or skilled assistant always in attendance at each; and such medicines, medical appliances, and disinfectants, shall be dispensed without charge by such medical practitioner or assistant, to persons bringing orders for the same from the district medical practitioners, and to other persons who apply for immediate medical treatment. And the names and addresses of all such applicants shall be sent to the district medical practitioner of the place in which they reside."

"Board to Supply Medical Aid to Poor Cholera Patients.—In every case of cholera or diarrhœa, where the patient is not under medical care and treatment, the Board shall cause medical assistance to be rendered with the utmost expedition, and such aid and comfort, nourishment, and accommodation, as the circumstances of the case will admit, with the object of restoring health."

"To Provide Nurses.—The Board shall provide competent nurses to aid every district medical practitioner in his attendance upon the patients suffering from the disease."

"To Provide Hospitals in Certain Cases.—When the medical adviser recommends, the Board shall, with as much dispatch as practicable, provide fit and proper accommodation for the reception of such patients as have no home, or cannot be properly treated at home, and may, with advantage to themselves, be removed, and shall cause the same to be provided with appliances, medicines, furniture, and other things necessary for the emergency, and shall appoint a legally qualified medical practitioner, with or without assistants, as the case may require, to attend to the same."

"To provide for the separation of the sick from the healthy in the same dwelling.—If cholera or choleraic diarrhœa exist in any dwelling whereof the medical practitioner reports that the sick and healthy cannot therein be properly separated, the Board shall forthwith cause adequate accommodation to be procured for the reception of the healthy; and when the medical practitioner recommends that the sick person shall not be removed, but that the

healthy shall be removed from the same room in which the sick person is lying, the Board shall cause the other inmates of such room to be removed to some convenient place of reception."

"To provide disinfectants and to cause things and places to be disinfected.—The Board shall, in dwellings where cholera or diarrhœa exists, cause proper disinfectants to be used in sufficient quantities for the purpose of disinfecting the discharges from the sick, and the bedding, clothing, and the other things thereby infected, and the utensils and privies in which such discharges may have been received."

"To cause infected goods to be destroyed.—The Board shall cause every article of clothing, bedding, or furniture which shall have been infected with any such discharge, and which they shall find incapable of being speedily disinfected, to be forthwith destroyed, the Board within a reasonable time replacing all such articles, or paying the reasonable value to the owner."

"To procure good water in place of that which is polluted.—If it be shown to the Board that any drinking water used in their district is polluted, they shall take measures, with as much expedition as possible, for procuring wholesome water to be supplied in its stead, so far as the case requires, to the inmates of the houses in their district, and for preventing, as far as possible, the further use of the polluted water. And every Board owning or having possession of any water works for the supply of water shall cause the reservoirs, cisterns, pipes, pumps, and other apparatus belonging thereto, to be carefully examined, cleansed, and purified, and other necessary measures to be taken, so that the water may be supplied with impunity."

"Provisions for Burials.—The Board shall make due arrangements with undertakers and with the proper authorities of the church-yards, burial grounds, and cemeteries of their district, so that coffins may be ready to be supplied immediately on demand, and interments speedily take place in the cases of deaths arising from cholera or diarrhœa, and the Board shall, when informed of any such death, cause the corpse to be buried with the earliest possible dispatch."

"Assemblage of persons at waking the dead prohibited.—Where any death shall occur from cholera or choleraic diarrhœa, no collection of persons shall assemble in the room where the corpse is, and no waking the dead shall be allowed."

"Corpses to be kept separate from the living.—The Board shall

cause the immediate removal, from any room which any living persons inhabit, of the corpse of every person dying from cholera or choleraic diarrhœa, until the time of its interment, and shall cause such means to be adopted for preventing the spread of infection from the corpse as their medical adviser shall recommend."

The subjoined note mentions action taken by the privy council which is of momentous interest to this Metropolitan sanitary district and to the State. That action had already, in several instances, arrested and prevented the shipment of cholera-infected persons and companies that were about to take passage for the port of New York:

"If the guardians shall be informed that cholera or choleraic diarrhœa exists, or within three days previously has existed, in any ship or vessel which may be lying within their union or parish, they shall cause the same to be forthwith visited, inspected, and otherwise dealt with, according to the circumstances of the case, in like manner as if it were an inhabited house on shore, and shall give all such medical and other directions in reference to the persons in such vessel or ship, as shall be requisite for preventing the spread of the disease, and for the disinfection or disposal of any things which may be infected or may have been exposed to infection, subject always to the provision of any order of council issued under the quarantine laws for the time being in force in such union or parish."

"The captain, master, or other officer in charge of any ship or vessel lying in any part or arm of the sea within the jurisdiction of the admiralty, but not comprised within any union or parish, in which ship or vessel any case of cholera or choleraic diarrhœa exists, or within three days previously has existed, shall obey every direction in writing addressed to him by the guardians of the nearest union or parish signed by their chairman or clerk, in reference to the medical and other treatment of the sick and other persons on board, with the view of preventing the spread of the disease, or to the disposal of the body of any person dead of the disease, or to the disinfection and disposal of the things infected with the disease, or otherwise to the removal of any unhealthy condition of the ship or vessel."

To the Metropolitan Board of Health, and its staff of sanitary inspectors, the foregoing abstract of principles and evidence concerning cholera prevention is happily not needed to strengthen or modify convictions which their own experience and inquiries have

conveyed to their minds the past season. But the facts here collated will serve as a memorandum to facilitate the general adoption of feasible and systematic methods and for the organization of effectual plans for protection against the further incursions of cholera, not only in the Metropolitan district, but in every city and town in our country.

Within a few weeks past there has accumulated in this bureau a mass of fresh testimony and reports concerning the present epidemic in various towns and different countries which will soon be reduced to a suitable form for the use of the public. The total force of these separate and independent records simply strengthens the conclusions presented in the foregoing abstract of evidence and preventive methods. This is as true of the thirty-nine conclusions of the International Conference on cholera, held during the summer at Constantinople, as of the reports we have received of the separate outbreaks and the experience of local authorities in various places in Europe and America.

THE INFLUENCE OF DAILY AND FULL INFORMATION GIVEN TO THE PUBLIC.

From the beginning, the daily press claimed the right to give to the public all that was known by the Board of Health concerning the localities, causes and sanitary management of cholera. All reasonable facilities were extended to the press, and, with scarcely an exception, those facilities were used by the editors and reporters in such manner as to promote the public welfare. This was to be expected. The events of the terrible war through which the nation had just passed, proved that the heart of the people was strongest when the truth was fully told to them.

A year ago, Dr. William Farr, the great hygienist and statist, wrote to us of Paris and some continental towns, that their sanitary authorities "do not see, as we do, that an accurate knowledge of facts—far from terrifying—re-assures and braces up the nerves of the people." And this has been proved true at every event in the epidemic that reached us since those words were written. The discretion, the good purpose, and the honest directness of the daily press in its bulletins of the epidemic and its advice to the people, have greatly promoted the popular application of preventive sanitary measures among us.

The mere trial of sanitary methods and health officers at the bar of public opinion was of less account than the wholesome influence

of unrestrained publicity upon the popular mind. The Registrar-General of England, in a recent note upon this point, justly remarks:

“Experience proves that the publication of facts quiets instead of disturbing the popular mind, and while it reveals the exact extent of danger, robs it of the halo of alarm with which the imagination surrounds indefinite pestilences, walking abroad by noon-day. The panic in Paris, Marseilles and Naples from cholera last year had no parallel in London in 1854; and if weekly tables had been published in Paris, that city would probably have enjoyed the same comparative immunity as London in 1865; for the London tables, demonstrating the diffusion of cholera by the wells and the water companies, led the latter, under legislative pressure, to seek purer sources of supply; while Paris was left behind in this work of improvement, and unnumbered thousands of the people perished.”

WAS CHOLERA GENERALLY EPIDEMIC IN NEW YORK ?

The fact that the commercial streets and almost the entire population that inhabits the cleanly and well-to-do sections of the city were unvisited by cholera the past season might be alleged as a ground for concluding that, even if Asiatic cholera was present in the city, it was not, like its former visitations, either pandemic or epidemic. And it must be confessed, to the credit of sanitary measures wholly, as we believe, that throughout the entire season cholera was, with few exceptions, limited to the tenant-house districts. From Bowling Green to King's Bridge, cholera selected its fields, and fearfully menaced all foul places. But it did not reach all such places, and from several it did reach, it speedily disappeared to return no more; and still more was it true that the cleanly, well drained, and well built districts escaped, with but three or four exceptions. Not a respectable hotel or commercial visitor in the city was reached by the infection. And to commerce and the nation this security was worth hundreds of millions. But there were dark hours when the pestilence threatened to ravage the cities, and when sanitary officers, who watched the subtle movements of the epidemic, trembled for the safety of the most thronged and wealthy districts. There were two occasions when we confronted cholera in collapse, at the height of the epidemic, in blocks adjacent to Madison square, in New York, and which, even in that rich quarter, might soon have become a raging pesti-

lence. The circumstances and results of the outbreaks in the public institutions, and in the military quarters of the Metropolitan district, proved that a pestilence was present. And the events in St. Louis, Cincinnati, Nashville, Memphis, Chicago, and on Tybee Island, proved that the cholera was in this, what it has been in all its visitations, a deadly infection. The progress of cholera across Europe last year and this (1865-1866), and everything we have learned of the manner and the dates of its journeyings from Eastern Asia and Java, with the Mohammedan pilgrims, to Mecca, and thence westward over the world by the ways of travel and emigration, afford new proofs that cholera reached us by means of its specifically infective property, and that the present visitation is as truly pandemic, or world-wide, as any former one. And as to what agencies should be ascribed the less universal distribution of the infection to towns and cities upon this continent, the logic of events connected with sanitary measures will decide. An exhaustive analysis of the individual records and all accumulated evidence concerning the cases, the circumstances, and the localities of cholera, wherever it appeared within the Metropolitan district, and in the neighboring cities and towns, will soon be completed. And in view of the practical and permanent value of the conclusions to which it may lead, it has seemed best that, in the review which we now present, no inferences or deductions should be made that will not be fully substantiated by that body of evidence. But, in advance, it is well to state that the following are among the conclusions warranted by what appears in that evidence now, as well as by what was personally observed by us during the progress of the epidemic :

First. That true Asiatic cholera appeared in various places in the cities of New York and Brooklyn, in scattered and widely-distant localities, for some time previous to July 10th; and that, as early as June 6th, it manifested a tendency to occur in groups and as a "house epidemic," even where there existed no other discoverable cause than the saturated clothing and the undisinfected excrements of the cholera sick; and, that at an early period in July, there existed in New York and Brooklyn certain well-marked cholera fields, in which the virus of the epidemic appears to have become, in some manner, fixed in the soil or in the local atmosphere of those neighborhoods.

Second. That neither the "house epidemics" nor the cholera fields were invariably those in which septic or common "summer

cholera" was most likely to occur, and that the grouping of cases, and the particular places of outbreak, could not invariably be accounted for upon the hypothesis of local origin and self-produced or domestic causes, though the presence of recognized collateral or localizing conditions that favored the propagation of the malady had few exceptions; those exceptions were significant and important.

Third. That in houses and localities where well-marked first cases of cholera were not promptly treated by local cleansing and specific disinfection, cholera soon gained a foothold as a local epidemic, and that we have found no large group of fatal cases in which this was not true; while in a great number of instances, where the disinfection was prompt and adequate, the arrest of cholera in the very worst localities and the worst houses and populations, was immediate and final.

Fourth. That in three hundred and sixty-two houses where individual persons or families were smitten by cholera, but which were promptly brought under full sanitary control by disinfection and local purification, the pestilence did not extend beyond the family in which the first case occurred.

Fifth. That over-crowding, bad ventilation, dampness and filth of apartments, dwelling-houses and blocks, together with neglected water-closets, common privies, domestic neglect, street filth, and defective drainage, were the chief localizing conditions of the epidemic wherever it spread rapidly or remained obstinately.

Sixth. That about one-half of all the victims of cholera who reached the cold stage died, and that no method of medical treatment seemed to have any positively curative effect upon cholera in collapse.

Seventh. That every important outbreak of the epidemic affecting more than one person or one family, seems to have been preceded some days, or more than twenty-four hours, by a first case or a small group of cases of cholera or choleraic diarrhœa in the house or the immediate locality.

Eighth. That in most instances where a first case of cholera was, from any cause, left to contaminate a foul common privy, a damp, porous, or filthy soil, or a crowded and filthy house, without thorough disinfection soon applied, other cases follow.

Properly to appreciate the meaning of these conclusions, the condition of things among the half million of tenant-house inhabitants in New York must be considered, as well as the crowding

and insalubrity of a vast number of hotels, boarding houses, and institutions. The records of former visitations of this pestilence should be reviewed, and the fatal ravages of the present epidemic in the public institutions of both cities, and among the military forces in their quarters in this district, should be borne in mind. To have watched the subtle movements of the epidemic, and to have considered, day by day, the consequences of any neglect of its causes, and not to have sought for some great practical lessons in these events by which this crowded metropolis and other cities may be aided in escaping such pestilences, would have been culpable forgetfulness of the highest obligations that the physician and the sanitary officer owe to society; nor could the officers of the Metropolitan Board of Health forget for a moment that it is the poor, the ignorant, the dependent classes of the population that must suffer first and chiefly, by the sacrifice of lives and all family ties, at the unrestrained march of cholera. The afflictions of pestilence and untimely deaths, the woes of orphanage, widowhood and pauperism, and all the greater sorrows that follow the cholera when it stalks epidemically from the rookery of poverty to the mansions of refinement, could not be lightly regarded. Nor could the Board and its officers forget that the uncontrolled prevalence of cholera in the chief mart of commerce would not only jeopard vast interests of business and of social progress, but would certainly spread pestilence throughout the chief towns of the State and the continent.

It was deemed important to embody in this preliminary report of the epidemic all those statistics and historical records that could, at so early a period, be rendered complete. The statistics are believed to be as perfect as we shall ever be able to make them, excepting only as regards the purely medical records of the individual victims of the pestilence, and the histories of all who recovered. These have been altogether omitted from this report. In the appended statements, contained in the succeeding pages, we present complete official records of the epidemic as it prevailed in streets and houses in New York and in the various public institutions.

The liberality of the Board in ordering several of the statistical diagrams to be engraved and herewith embodied has rendered needless much of the tedious work of statistical and comparative descriptions of the course of the epidemic in relation to dates,

atmospheric conditions, ratios of mortality, and the current course of cholera in the several divisions of the epidemic history.

The fact should here be stated that it has not been deemed desirable, in this merely historical report, to undertake any examination of the evidences which bear upon the particular theories of Pettenkofer and other philosophers who have most largely contributed to exact knowledge of the means of prevention and control of cholera. But the many obligations we owe to Drs. Wm. Farr, J. Simon, E. A. Parkes, Pettenkofer, and Wm. Budd make it a duty to state that to them especially is honor due from every people, for the steady and triumphant inquiries which have at last resulted in the application of the definite and effective means of prevention and control of cholera which the Metropolitan Board of Health has so successfully put into operation. And in this report such testimony as theirs is quoted freely, to show that our experience in New York is not singular or unsupported by the best sanitary authorities in Europe.

In concluding this report we would express to the Board of Health the conviction derived from a careful investigation of every fact that has come to our knowledge regarding the epidemic as it prevailed in this district, and in other places, that no labors, plans, or acts of local cleansing, sanitary care, abatement of nuisances, or special disinfection to prevent the propagation of cholera, have been in vain; and more, that none of these things could have been omitted without great peril to the inhabitants and the commerce of the metropolis and the continent. Upon all these questions the medical officers of the Board have no difference of opinion, and they will justly hope that the work of sanitary improvement which the Board has commenced, may go forward without interruption, until every section of the Metropolitan district shall have been divested of the local conditions that invite pestilence, and until every class of the population is surrounded by the safeguards of hygiene.

E. HARRIS.

NEW YORK, *Dec.* 31, 1866.

The number of fatal cases of cholera in each street in New York, and the number of houses in said streets in which these cases occurred, as recorded in the Bureau of Vital Statistics.

NAME OF STREET.	Total fatal cases on street.	Total No. of houses in which deaths occurred at home and in Cholera Hospital.	No. of houses with only one death.	No. of houses with only two deaths.	No. of houses with three deaths.	No. of houses with four or more deaths.	Total number removed to Cholera Hospital.
Albany	1	1	1				
Amity	1	1	1				
Ann	1	1	1				
Avenue A	4	4	4				
Avenue B	1	1	1				
Batavia	1	1	1				
Baxter	35	19	11	5		3	13
Bayard	3	3	3				
Beekman	1	1	1				
Bleecker	1	1	1				
Bowery	1	1	1				
Bridge	1	1	1				
Broadway	9	7	6		1		2
Broome	5	4	3	1	1		
Castle Garden	3	1					3
Canal	3	1	1				1
Clinton Place	1	1	1				1
Chambers	1	1	1				

Number of fatal cases of *cholera*—Continued.

NAME OF STREET.	Total fatal cases on street.	Total No. of houses in which the deaths occurred Cholera Hospital.	No. of houses with only one death.	No. of houses with only two deaths.	No. of houses with three deaths.	No. of houses with four or more deaths.	Total number re- moved to Cholera Hospital.
Charlton	3	3	3				3
Cherry	8	8	8				1
Christopher	2	2	2				
Chrystie	5	3	1	2			
Clarkson	1	1	1				
Clinton	1	1	1				
Church	1	1	1				
Chatham	2	2	2				
Centre (City prison)	2	2	2				
Crosby	2	1		1			
Delancey	2	2	2				
Dover	2	1	2	1			
East Broadway	2	2	2				
East Houston	1	1	1				
East Eighth	1	1	1				
East Tenth	1	1	1				
East Eleventh	3	3	3				
East Twelfth	2	2	2				
East Thirteenth	5	4	3	1			

[illegible]

Number of fatal cases of cholera—Continued.

NAME OF STREET.	Total fatal cases on street.	Total No. of houses in which the deaths occurred at home and in Cholera Hospital.	No. of houses with only one death.	No. of houses with only two deaths.	No. of houses with three deaths.	No. of houses with four or more deaths.	Total number re-moved to Cholera Hospital.
East One Hundred and Nineteenth	4	2	1	2	1	1	3
East One Hundred and Twentieth	1	1	1	1	1	1	1
East One Hundred and Twenty-first	1	1	1	1	1	1	1
East One Hundred and Twenty-second	1	1	1	1	1	1	1
East One Hundred and Twenty-fourth	2	2	2	2	2	2	2
East One Hundred and Twenty-fifth	2	2	2	2	2	2	2
Eighth Avenue	1	1	1	1	1	1	1
Eldridge	1	1	1	1	1	1	1
Elizabeth	7	7	7	7	7	7	7
Elm	1	1	1	1	1	1	1
First Avenue	4	3	2	1	1	1	1
Franklin	6	4	2	2	2	2	2
Front	1	1	1	1	1	1	1
Goerek	1	1	1	1	1	1	1
Grand	4	4	4	4	4	4	4
Greene	1	1	1	1	1	1	1
Greenwich	10	8	6	2	2	2	4
Henry	3	3	3	3	3	3	3
Hester	3	3	3	3	3	3	3

Hudson	2	2	2
Jackson	1	1	1
James	7	5	4
Jersey	4	3	2
King	5	4	3
Laurens	1	1	1
Leonard	4	3	2
Lewis	3	3	3
Little Twelfth	1	1	1
Mangin	1	1	1
Murray (Sloop N. R.)	1	1	1
Macdougall	1	1	1
Madison	5	3	2
Madison Avenue	1	1	1
Marion	2	2	2
Market	2	2	2
Mechanics' alley	1	1	1
Mott	15	12	9
Mulberry	67	33	16
Monroe	1	1	1
Ninth	1	1	1
Ninth Avenue	7	6	5
Norfolk	2	2	2
North Moore	2	2	2
Oak	5	4	3
Oliver	3	3	3
Old Slip (caval boat)	1	1	1

Number of fatal cases of cholera—Continued.

NAME OF STREET.	Total fatal cases on street.	Total No. of houses in which the deaths occurred at home and in Cholera Hospital.	No. of houses with only one death.	No. of houses with only two deaths.	No. of houses with three deaths.	No. of houses with four or more deaths.	Total number re- moved to Cholera Hospital.
Orchard	1	1	1				1
Pearl	5	4	1				2
Pell	2	1		1			1
Perry	1	1	1				
Roosevelt	7	4	2	1	1		4
Second	1	1	1				
State	4	2	1		1		3
Stanton	1	1	1				
Second Avenue	3	3	3				
Seventh Avenue	1	1	1				
Sixth Avenue	1	1	1				
Stryker's Lane	1	1	1				
Sixth	2	1		1			
Sheriff	1	1	1				
Spring	1	1	1				
Suffolk	1	1	1				
Sullivan	2	1		1			
Tenth Avenue	3	3	3				1
Third Avenue	9	9	9				
	10	10	10				1

Thompson	3	3	3	1	1	1
Third	3	3	3	1	1	2
Thomas	6	6	6	1	1	2
Trinity Place	2	2	2	1	1	2
Varick	1	1	1	1	1	2
Varick Place	1	1	1	1	1	2
Vestry (sloop)	1	1	1	1	1	2
Whitehall	3	3	3	1	1	2
Washington	17	17	17	4	4	12
Water	6	6	6	1	1	1
Waverly Place	2	2	2	1	1	2
Willett	1	1	1	1	1	2
William	2	2	2	1	1	2
Worth	4	4	4	1	1	2
West	4	4	4	1	1	2
West Broadway	1	1	1	1	1	2
West Twelfth	1	1	1	1	1	2
West Thirteenth	1	1	1	1	1	2
West Fourteenth	1	1	1	1	1	2
West Sixteenth	3	3	3	1	1	2
West Seventeenth	1	1	1	1	1	2
West Eighteenth	1	1	1	1	1	2
West Nineteenth	1	1	1	1	1	2
West Twenty-first	2	2	2	1	1	2
West Twenty-third	1	1	1	1	1	2
West Twenty-fourth	1	1	1	1	1	2
West Twenty-fifth	4	4	4	1	1	2

Number of fatal cases of cholera—Continued.

NAME OF STREET.	Total fatal cases on street.	Total No. of houses in which the deaths occurred Cholera Hospital.	No. of houses with only one death.	No. of houses with only two deaths.	No. of houses with three deaths.	No. of houses with four or more deaths.	Total number re- moved to Cholera Hospital.
West Twenty-sixth	9	5	2	2	1		
West Twenty-eighth	2	2	2				
West Twenty-ninth	3	2	1	1			
West Thirtieth	1	1	1				
West Thirty-first	1	1	1				
West Thirty-second	1	1	1				
West Thirty-fifth	1	1	1				
West Thirty-sixth	3	3	3				
West Thirty-seventh	1	1	1				
West Thirty-eighth	2	2	2				
West Thirty-ninth	3	3	3				
West Fortieth	4	4	4				
West Forty-first	7	3	2		1		
West Forty-fourth	2	1		1			
West Forty-fifth	1	1	1				
West Forty-sixth	3	3	3				
West Fifty-second	5	4	3	1			1
West Fifty-third	3	3	3				
West Fifty-fourth	7	3	2			1	1

West Fifty-fifth	2	2	2						
West Fifty-seventh	1	1	1						
West Fifth-eighth	1	1	1						
West Fifty-second	1	1	1						
West Sixty-third	2	2	2						1
West Sixty-fourth	4	3	2		1				1
West Sixty-sixth	3	2	1		1				
West Sixty-seventh	6	5	4		1				1
West Sixty-eighth	5	3	1		2				2
West Sixty-ninth	1	1	1						
West Seventy-fourth	2	1			1				
West Seventy-sixth (North river)	1	1	1						
West Seventy-ninth	1	1	1						
West Eighty-first	1	1	1						
West Eighty-eighth	1	1	1						
West One Hundred and Twenty-fifth	7	2						1	1
Pier 3, East river	1	1	1						
Total	583*	440	362	61	16	10	123		

* By adding certain other cases that were not accredited to any home in the city, when taken to Cholera Hospital, this total number agrees with preceding tables.

NORF.—The map which has been prepared to accompany this record, cannot be engraved in season to be inserted in this edition of the report. The precise locality of every fatal case of cholera, and of every death by other diarrhoeal maladies, is shown by distinct symbols. Thus the map presents, at one view, all the "cholera fields" of New York. E. H.

METEOROLOGICAL RECORD DURING THE EPIDEMIC PERIOD.

We are indebted to Prof. O. W. Morris, of the New York Institution for the Deaf and Dumb, for the subjoined meteorological record which he has kindly arranged in accordance with our usual plan. To Dr. Jonas P. Loines, of the Eastern Dispensary, we are indebted for the daily and weekly records which are presented to the Board and registered in the records of the bureau.

In studying a great epidemic it seemed desirable to obtain standard observations at some point beyond the built-up portions of the city. At Prof. Morris' point of observation, at Fanwood, One Hundred and Seventy-fifth street, on a bluff above the Hudson, where no artificial influences would affect the atmosphere, the desired conditions were attained. The instruments and methods for the observations are, at both places of making these records, the same as those provided by the Smithsonian Institute.

Prof. Morris' instruments are about 135 feet above tide level, and Dr. Loines' are 45 feet above tide.

INSTITUTION FOR DEAF AND DUMB, }
NEW YORK, Dec. 12th, 1866, }

DR. HARRIS—

Dear Sir—Preceding the tables is a description of the names of clouds used on my register. They are those classed by Howard and used by the Smithsonian observers.

At the close of each day's observations, I have given a condensed list, which may serve to indicate the several characters sufficiently for popular use.

Respectfully,

ORAN W. MORRIS.

As an explanation of the terms used in the register of the meteorological observations furnished by me, I would mention :

1. *Cirrus clouds* are those resembling carded cotton, or a bunch of hair, the slender white filaments floating the highest of any, and often precede a change of weather.

2. *The Cumulus* resemble balls of cotton, or mountains of snow; are of various forms, and characteristic of fine weather.

3. *The Stratus* are horizontal streaks of clouds or bands.

4. *The Cirro-Cumulus* resemble little bunches of wool, sometimes called woolly clouds, often disappear at night, and sometimes indicate heat.

5. *The Cirro-Stratus*, a long narrow band of dark clouds, with light filaments along the upper portion; they are soon followed by rain.

6. *The Cumulo-Stratus* are rounded bunches, heaped together towards the zenith, while the lower portions appear dark or bluish, and pass into the following.

7. *The Nimbus* are of a uniform gray color, with ragged edges and gloomy appearance, .

Or, for a condensed description :

1. *Cirrus*, like carded cotton, or hair.

2. *Cumulus*, balls of cotton or heaps of snow.

3. *Stratus*, streaks of clouds, white or gray.

4. *Cirro-Cumulus*, woolly clouds or bunches of wool.

5. *Cirro-Stratus*, long bands, with woolly tops.

6. *Cumulo-Stratus*, round bunches on dark bands.

7. *Nimbus*, rain clouds, dark gray.

O. W. M.

Meteorological observations, in the epidemic period, May 1 to December 1, 1866.

	8 o'Clock, A. M.				2 o'Clock, P. M.				9 o'Clock, P. M.			
	Barometer.	Thermometer.	Evaporation below.	Wind.	Barometer.	Thermometer.	Evaporation below.	Wind.	Barometer.	Thermometer.	Evaporation below.	Wind.
May 1, Tuesday -----	29.69	50.0	8.5	S. E.	29.66	50.0	7.8	S. E.	29.28	42.0	7.0	N. E.
2, Wednesday -----	29.21	38.0	0.5	N. W.	29.32	55.0	9.2	N. W.	29.58	41.0	3.0	N. W.
3, Thursday -----	29.62	40.5	2.0	N. W.	29.62	50.0	9.3	N. W.	29.63	41.0	5.0	N. W.
4, Friday -----	29.69	42.5	7.0	W.	29.51	60.9	15.0	W.	29.33	53.0	11.0	N. W.
5, Saturday -----	29.38	49.0	7.0	N.	29.37	58.5	14.5	N.	29.67	52.5	10.5	N.
6, Sunday -----	29.77	50.0	7.0	N. W.	29.72	63.5	14.0	N. W.	29.80	51.0	7.7	N. W.
7, Monday -----	29.97	49.0	8.0	N.	29.95	61.5	13.5	N. W.	29.95	49.0	6.0	N. W.
8, Tuesday -----	29.99	52.0	7.0	S. W.	29.87	64.0	9.0	S. W.	29.81	51.5	4.5	S. W.
9, Wednesday -----	29.71	56.0	3.1	S. E.	29.51	71.5	10.0	S. W.	29.60	54.0	8.0	N. W.
10, Thursday -----	29.82	56.5	8.5	N. W.	29.73	71.2	15.0	W.	29.76	56.0	4.0	S. E.
11, Friday -----	29.77	59.0	4.0	S. E.	29.90	68.0	2.3	S. W.	29.79	57.0	4.0	S. E.
12, Saturday -----	29.75	58.0	4.5	S. E.	29.72	72.0	12.0	S. E.	29.72	63.0	7.8	S. E.

13, Sunday	29.70	64.0	5.0	S.E.	29.50	72.0	11.0	S.E.	29.50	51.0	6.5	N.W.
14, Monday	29.54	46.5	7.5	N.W.	29.66	57.8	14.3	N.W.	29.77	50.2	11.2	N.W.
15, Tuesday	29.89	47.5	8.0	S.W.	29.83	57.5	10.3	S.W.	29.78	51.5	4.5	S.E.
16, Wednesday	29.66	58.0	6.5	S.	29.59	73.5	11.0	S.W.	29.60	59.0	4.0	W.
17, Thursday	29.65	47.0	0.0	N.E.	29.72	51.2	0.7	N.E.	29.71	49.0	2.0	N.E.
18, Friday	29.70	51.0	2.0	N.E.	29.68	54.5	2.5	N.E.	29.68	54.5	3.5	N.E.
19, Saturday	29.67	54.0	5.0	N.W.	29.65	70.2	10.5	N.	29.66	59.0	7.0	N.
20, Sunday	29.65	58.0	5.0	N.E.	29.65	70.6	11.0	S.W.	29.45	56.3	5.0	S.E.
21, Monday	29.50	59.5	6.1	W.	29.40	74.0	20.5	W.	29.51	53.0	10.0	N.W.
22, Tuesday	29.53	50.5	6.5	N.W.	29.61	55.0	5.0	N.W.	29.77	45.0	6.5	N.W.
23, Wednesday	29.85	46.0	6.0	W.	29.81	58.0	11.2	W.	29.95	51.0	6.0	W.
24, Thursday	29.94	53.0	5.5	S.W.	29.86	65.2	13.0	S.W.	29.82	52.2	4.0	S.W.
25, Friday	29.73	54.0	5.0	W.	29.61	70.2	14.7	S.W.	29.62	57.1	13.0	N.E.
26, Saturday	29.61	54.0	3.5	N.E.	29.57	71.5	8.5	S.E.	29.55	60.5	2.5	E.
27, Sunday	29.45	59.5	1.5	S.E.	29.33	68.8	3.8	S.E.	29.24	60.0	1.0	S.E.
28, Monday	29.15	63.2	1.2	S.	29.20	63.5	10.1	W.	29.45	56.0	7.0	N.W.
29, Tuesday	29.53	55.5	3.5	S.W.	29.56	57.6	4.6	S.W.	29.56	52.5	2.0	W.
30, Wednesday	29.49	52.2	5.0	N.W.	29.53	64.0	12.3	W.	29.63	60.0	8.0	W.
31, Thursday	29.72	58.7	6.7	W.	29.75	71.5	12.7	W.	29.89	61.6	10.6	N.W.
June 1, Friday	29.98	54.0	7.5	N.W.	29.97	66.0	12.0	W.	20.98	56.0	4.0	S.E.
2, Saturday	28.93	54.2	4.2	E.	29.86	62.0	5.5	S.E.	29.83	58.5	2.0	S.E.
3, Sunday	29.79	58.2	1.5	N.E.	29.73	61.3	2.3	N.E.	29.64	55.2	1.2	N.E.
4, Monday	29.67	56.0	0.5	N.E.	29.70	63.5	2.0	N.E.	29.72	63.0	2.0	N.E.
5, Tuesday	29.74	59.8	0.5	N.E.	29.77	64.0	2.0	N.E.	29.77	60.5	1.5	N.E.

Meteorological Observations—Continued.

	7 o'Clock, A. M.				2 o'Clock, P. M.				9 o'Clock, P. M.			
	Barometer.	Thermometer.	Evaporation below.	Wind.	Barometer.	Thermometer.	Evaporation below.	Wind.	Barometer.	Thermometer.	Evaporation below.	Wind.
June 6, Wednesday -----	29.72	63.2	2.0	N.E.	29.67	74.5	4.3	S.E.	29.63	65.5	4.5	W.
7, Thursday -----	29.62	65.0	7.5	W.	29.55	67.0	6.7	W.	29.61	67.0	8.2	W.
8, Friday -----	29.61	65.2	6.2	W.	29.62	71.7	9.5	N.E.	29.73	62.0	2.0	S.E.
9, Saturday -----	29.75	64.5	8.5	S.E.	29.72	72.0	9.0	S.E.	29.79	63.0	7.0	S.E.
10, Sunday -----	29.85	62.0	4.0	S.E.	29.87	68.0	8.0	S.E.	29.94	56.3	2.3	S.E.
11, Monday -----	29.92	62.5	7.5	N.W.	29.92	76.0	14.0	N.W.	29.92	69.2	10.5	W.
12, Tuesday -----	29.94	62.7	10.7	N.W.	29.89	73.3	13.3	N.E.	29.87	63.2	10.2	N.E.
13, Wednesday -----	29.85	63.0	2.7	S.E.	29.78	69.0	6.0	S.E.	29.73	61.7	2.5	E.
14, Thursday -----	29.75	58.5	2.0	N.E.	29.75	68.0	3.0	S.E.	29.72	63.0	2.0	E.
15, Friday -----	29.67	67.0	3.0	W.	29.63	79.2	15.5	W.	29.63	69.8	7.8	W.
16, Saturday -----	29.78	66.8	7.3	W.	29.76	79.5	12.0	S.E.	29.72	73.0	9.0	S.E.
17, Sunday -----	29.60	68.5	6.5	S.E.	29.59	70.0	3.0	S.E.	29.56	66.0	2.0	S.E.
18, Monday -----	29.51	67.7	2.1	S.E.	29.51	73.5	5.0	N.W.	29.63	64.5	8.5	S.W.
19, Tuesday -----	29.72	63.0	9.0	S.W.	29.75	68.3	9.3	W.	29.78	62.5	6.7	N.W.
20, Wednesday -----	29.95	59.0	5.5	N.W.	29.96	73.0	11.2	W.	29.97	67.2	6.2	W.

21, Thursday	29.97	67.6	5.6	S.W.	29.93	78.8	11.8	S.W.	29.92	68.8	4.8	S.W.
22, Friday	29.86	68.1	4.6	S.W.	29.74	82.2	12.5	S.W.	29.77	71.5	5.0	S.W.
23, Saturday	29.79	68.8	1.8	S.W.	29.79	84.0	5.0	S.E.	29.78	70.0	2.0	S.E.
24, Sunday	29.85	68.0	1.3	S.	29.96	83.5	11.5	S.	29.89	72.0	3.0	S.
25, Monday	29.89	73.7	4.5	S.W.	29.84	87.0	11.0	W.	29.90	82.0	9.0	W.
26, Tuesday	29.85	77.0	7.0	W.	29.87	88.0	17.0	W.	29.84	75.5	4.0	W.
27, Wednesday	29.70	78.5	5.5	W.	29.63	87.5	11.5	W.	29.66	77.8	1.8	N.W.
28, Thursday	29.68	67.2	1.2	S.W.	29.66	87.0	13.0	W.	29.85	67.5	3.5	N.W.
29, Friday	29.92	67.8	6.2	N.W.	29.93	67.8	4.8	N.W.	29.95	66.5	2.8	N.W.
30, Saturday	29.98	66.2	8.2	N.W.	29.99	68.6	6.1	E.	30.07	68.5	6.5	N.E.
July 1, Sunday	30.13	66.0	4.5	N.E.	30.15	69.5	6.5	E.	30.20	65.0	3.5	S.
2, Monday	30.23	76.5	13.0	N.E.	30.16	79.0	16.0	N.E.	30.10	71.5	7.0	S.
3, Tuesday	30.04	82.5	12.0	E.	29.91	87.5	16.6	S.E.	29.91	77.0	9.5	S.
4, Wednesday	29.88	79.5	9.5	S.E.	29.78	77.4	7.4	S.E.	29.84	69.5	1.5	S.E.
5, Thursday	29.94	76.8	4.8	S.E.	29.94	85.8	12.8	S.E.	29.97	78.0	6.0	S.W.
6, Friday	29.98	88.0	10.0	S.E.	29.90	91.0	13.0	S.W.	29.88	84.0	6.0	S.
7, Saturday	29.92	90.5	12.0	N.W.	29.83	94.6	16.1	S.	29.83	86.0	7.0	S.W.
8, Sunday	29.85	91.0	13.5	S.	29.77	94.5	18.0	S.W.	29.85	75.5	1.0	N.W.
9, Monday	29.89	76.0	4.0	N.	29.96	73.0	4.0	W.	30.02	71.5	7.5	N.
10, Tuesday	30.16	66.0	7.5	N.	30.14	71.5	2.0	N.	30.14	67.0	4.5	N.
11, Wednesday	30.16	75.5	11.0	S.	30.06	79.0	15.6	S.	30.03	76.8	14.8	S.W.
12, Thursday	30.04	82.0	10.2	N.	29.92	87.0	17.0	S.W.	29.85	77.0	6.4	S.W.
13, Friday	29.85	87.6	13.6	W.	29.76	93.0	17.4	W.	29.74	86.5	9.0	W.
14, Saturday	29.82	83.0	8.2	N.	29.87	86.0	11.2	E.	29.94	73.7	2.7	E.

Meteorological Observations—Continued.

	7 o'Clock, A. M.				2 o'Clock, P. M.				9 o'Clock, P. M.			
	Barometer.	Thermometer.	Evaporation below.	Wind.	Barometer.	Thermometer.	Evaporation below.	Wind.	Barometer.	Thermometer.	Evaporation below.	Wind.
July 15, Sunday -----	29.99	88.5	15.5	S.E.	20.92	95.0	23.0	S.E.	29.90	83.0	6.0	W.
16, Monday -----	30.01	93.5	15.5	N.	20.97	95.5	17.2	S.W.	30.02	83.5	6.5	S.E.
17, Tuesday -----	29.98	88.5	10.0	S.	29.87	101.5	19.8	S.	29.88	85.5	10.0	N.W.
18, Wednesday -----	29.82	89.0	11.0	S.E.	29.44	96.5	18.1	S.E.	29.70	79.0	2.2	E.
19, Thursday -----	29.83	69.0	4.3	N.	29.88	76.5	9.3	N.	29.98	71.0	2.2	E.
20, Friday -----	30.08	71.7	3.7	S.	30.03	73.4	9.2	S.E.	30.02	67.8	2.8	S.E.
21, Saturday -----	29.95	62.2	2.0	N.E.	29.88	66.8	2.8	N.E.	29.84	64.7	1.0	N.E.
22, Sunday -----	29.77	65.5	1.0	N.	29.71	76.2	6.3	S.	29.73	70.3	0.5	E.
23, Monday -----	29.66	81.0	9.0	N.	29.58	81.5	13.0	N.	29.72	70.5	5.8	W.
24, Tuesday -----	29.88	73.0	7.5	N.W.	29.86	79.5	14.5	N.W.	29.88	74.2	6.0	W.
25, Wednesday -----	29.92	83.5	9.5	S.	29.85	84.5	12.5	S.	29.93	65.0	0.0	N.
26, Thursday -----	30.03	74.0	1.0	W.	29.97	78.0	7.5	S.	29.99	72.0	1.0	S.
27, Friday -----	29.97	81.0	6.5	S.	29.88	79.5	6.5	S.	29.85	74.0	2.5	E.
28, Saturday -----	29.76	83.2	7.7	S.	29.64	71.0	1.0	S.	29.67	70.5	7.5	S.

29, Sunday	29.68	79.0	8.5	N.E.	29.62	82.0	12.0	S.E.	29.65	76.0	5.0	W.
30, Monday	29.70	75.0	3.5	N.W.	29.66	82.5	9.0	N.W.	29.76	68.0	0.0	W.
31, Tuesday	29.80	74.0	6.5	N.	29.79	78.3	11.3	N.	29.81	75.5	8.5	N.W.
Aug. 1, Wednesday	29.87	83.5	10.5	S.	29.77	82.0	2.3	S.	29.74	76.0	5.5	S.
2, Thursday	29.69	77.0	3.5	S.	29.66	84.8	10.3	W.	29.71	74.0	6.6	W.
3, Friday	29.89	78.2	12.2	N.	29.85	77.0	13.2	N.	29.90	72.0	5.0	E.
4, Saturday	29.86	80.5	10.5	S.	29.72	77.0	6.5	S.	29.78	70.5	1.0	W.
5, Sunday	29.85	86.0	19.0	N.W.	29.85	90.0	17.5	W.	29.88	86.0	7.0	W.
6, Monday	29.90	82.0	16.5	S.	29.85	80.0	17.0	N.W.	29.88	76.0	11.5	W.
7, Tuesday	29.96	82.0	19.0	N.	29.85	81.5	19.5	N.	29.89	75.0	12.0	E.
8, Wednesday	29.88	84.0	21.0	N.	29.80	85.5	22.5	N.	29.75	77.0	13.5	E.
9, Thursday	29.46	60.0	0.0	S.W.	29.59	64.0	0.0	S.W.	29.65	62.5	3.5	S.W.
10, Friday	29.75	62.0	8.0	W.	29.79	71.5	13.0	W.	29.83	66.5	9.0	W.
11, Saturday	29.89	61.0	7.0	N.W.	29.90	76.5	13.5	W.	29.93	66.5	5.5	W.
12, Sunday	30.05	65.8	4.8	W.	29.97	77.8	11.8	W.	29.95	67.0	4.0	S.E.
13, Monday	29.92	64.6	2.5	S.E.	29.89	62.5	2.5	N.E.	29.80	60.3	1.3	N.E.
14, Tuesday	29.72	64.0	1.0	N.E.	29.72	68.5	3.0	S.E.	29.72	67.0	2.5	E.
15, Wednesday	29.72	68.8	2.6	N.E.	29.77	74.8	2.0	E.	29.82	66.5	0.5	N.E.
16, Thursday	29.85	58.5	4.5	N.W.	29.89	65.7	10.7	N.W.	29.92	62.0	7.0	N.W.
17, Friday	29.94	54.3	4.2	N.W.	29.83	71.0	13.2	N.W.	29.89	66.6	11.6	N.W.
18, Saturday	29.83	61.2	9.2	W.	29.77	73.0	9.0	W.	29.81	70.0	6.5	S.E.
19, Sunday	29.78	72.0	7.0	S.E.	29.77	74.0	3.5	S.E.	29.63	69.0	3.6	W.
20, Monday	29.67	68.0	3.7	W.	29.68	70.5	10.7	W.	29.71	66.0	10.0	N.W.
21, Tuesday	29.82	60.8	4.8	N.W.	29.72	74.5	12.5	S.W.	29.72	69.7	7.5	S.W.

Meteorological Observations—Continued.

	7 o'Clock, A. M.				2 o'Clock, P. M.				9 o'Clock, P. M.			
	Barometer.	Thermometer.	Evaporation below.	Wind.	Barometer.	Thermometer.	Evaporation below.	Wind.	Barometer.	Thermometer.	Evaporation below.	Wind.
Aug. 22, Wednesday	29.63	65.0	2.2	S.W.	29.65	72.8	9.8	S.W.	29.70	63.6	5.6	W.
23, Thursday	29.65	59.2	4.6	N.E.	29.56	54.2	1.2	N.E.	29.58	56.7	2.7	W.
24, Friday	29.67	53.6	3.5	W.	29.72	65.8	9.6	W.	29.79	57.1	6.1	N.W.
25, Saturday	29.83	53.0	4.0	W.	29.84	68.0	9.0	W.	29.87	58.2	9.1	W.
26, Sunday	29.86	58.0	5.0	W.	29.81	69.5	9.0	W.	29.85	61.5	3.5	W.
27, Monday	29.87	60.2	9.4	W.	29.83	72.2	11.1	W.	29.89	64.0	3.0	W.
28, Tuesday	29.84	64.3	1.1	W.	29.82	74.3	8.3	S.E.	29.82	62.8	1.7	S.E.
29, Wednesday	29.79	64.4	2.4	N.E.	29.75	69.0	4.0	N.E.	29.71	65.6	2.1	N.E.
30, Thursday	29.70	64.0	2.0	N.W.	29.75	74.0	11.0	N.W.	29.78	66.0	4.0	E.
31, Friday	29.76	66.0	1.5	W.	29.79	78.5	9.0	W.	29.83	69.3	2.0	S.
Sept. 1, Saturday	29.83	70.0	1.0	S.E.	29.79	81.5	8.9	S.E.	29.79	71.0	2.0	S.E.
2, Sunday	29.76	71.5	2.5	S.E.	29.65	81.5	6.7	S.W.	28.79	72.8	1.6	S.W.
3, Monday	29.84	75.0	3.0	N.E.	29.81	82.0	7.0	N.E.	29.83	74.0	3.0	N.E.
4, Tuesday	29.79	70.1	2.3	N.E.	29.75	74.2	5.2	N.E.	29.76	70.0	3.0	N.
5, Wednesday	29.68	68.0	2.5	W.	29.66	80.0	7.0	S.W.	29.75	70.8	1.7	S.E.

6, Thursday	29.80	68.0	7.6	W.	29.81	72.5	9.5	W.	29.98	66.0	6.0	N.W.
7, Friday	29.94	66.0	6.8	N.E.	29.78	73.2	8.2	N.E.	29.66	68.0	1.0	N.E.
8, Saturday	29.59	70.2	4.7	W.	29.61	75.5	12.5	W.	29.82	65.0	8.0	N.W.
9, Sunday	29.90	59.0	5.5	N.W.	29.89	69.0	12.0	N.W.	29.99	61.5	5.0	N.W.
10, Monday	30.00	55.2	4.2	N.W.	29.98	68.7	10.7	W.	29.92	62.0	3.0	W.
11, Tuesday	29.85	63.0	2.8	S.W.	29.73	67.0	2.0	S.E.	29.71	68.0	2.0	S.E.
12, Wednesday	29.53	71.5	2.7	W.	29.60	75.0	12.0	W.	29.70	69.5	6.5	W.
13, Thursday	29.71	63.0	4.7	W.N.W.	29.76	72.0	14.5	W.	29.82	66.0	10.0	W.
14, Friday	29.86	61.0	4.0	S.W.	29.75	70.0	7.0	S.W.	29.77	62.0	4.0	W.
15, Saturday	29.87	54.0	2.0	W.N.W.	29.88	59.8	5.3	N.W.	30.13	52.0	5.0	N.W.
16, Sunday	30.19	46.8	5.6	N.W.	30.17	60.0	7.5	S.E.	30.13	52.0	2.8	S.W.
17, Monday	29.96	57.0	2.0	S.	29.87	72.0	8.5	S.	29.82	66.0	2.0	S.E.
18, Tuesday	29.73	65.8	1.1	S.W.	29.65	81.6	9.4	S.	29.72	69.5	3.0	N.E.
19, Wednesday	29.69	65.7	1.1	S.W.	29.63	76.5	6.5	S.W.	29.73	69.2	1.0	S.W.
20, Thursday	29.78	58.5	2.5	N.E.	29.80	64.0	1.5	N.E.	29.82	63.5	1.0	N.E.
21, Friday	29.70	69.7	1.7	S.E.	29.61	78.0	6.2	S.E.	29.61	58.6	1.1	S.W.
22, Saturday	29.67	56.0	2.0	N.W.	29.73	62.2	6.2	N.W.	29.87	58.0	6.0	N.W.
23, Sunday	29.99	46.3	6.3	N.	30.07	64.0	6.0	E.	30.02	53.0	4.0	N.E.
24, Monday	30.12	45.8	3.8	E.	30.12	57.5	4.5	N.	30.10	56.0	4.5	N.E.
25, Tuesday	30.04	58.5	2.0	N.W.	29.99	66.0	6.0	W.	29.99	60.2	1.2	W.
26, Wednesday	29.81	64.0	1.0	S.W.	29.60	69.7	1.7	S.E.	29.76	55.0	1.0	N.E.
27, Thursday	29.84	51.8	2.7	N.	29.95	63.6	9.6	N.	30.04	66.0	2.5	N.
28, Friday	30.11	54.7	4.5	N.	30.17	64.9	9.9	N.	30.16	58.0	6.0	N.
29, Saturday	30.13	57.0	4.0	N.E.	30.07	68.8	5.3	N.E.	30.02	64.0	3.0	N.E.

Meteorological Observations—Continued.

	7 o'Clock, A. M.				2 o'Clock, P. M.				9 o'Clock, P. M.			
	Barometer.	Thermometer.	Evaporation below.	Wind.	Barometer.	Thermometer.	Evaporation below.	Wind.	Barometer.	Thermometer.	Evaporation below.	Wind.
Sep. 30, Sunday -----	29.86	60.0	2.0	N.E.	29.86	71.0	8.0	N.E.	29.89	65.0	2.5	N.E.
Oct. 1, Monday -----	21.92	60.0	5.0	N.	29.97	67.3	9.5	N.	30.02	55.1	2.8	N.
2, Tuesday -----	29.96	55.1	3.1	N.	29.83	68.2	6.2	S.W.	29.76	61.5	1.0	S.W.
3, Wednesday -----	29.62	60.0	1.2	W.	29.68	62.0	7.7	W.	29.77	50.0	6.0	S.W.
4, Thursday -----	29.91	41.6	5.5	N.	29.99	50.4	9.4	N.	30.10	45.2	6.7	N.W.
5, Friday -----	30.32	36.8	3.6	N.W.	30.38	49.0	9.5	N.W.	30.38	46.1	6.1	N.W.
6, Saturday -----	30.37	41.0	4.0	W N W	30.32	62.0	6.5	S.W.	30.28	56.0	6.0	S.W.
7, Sunday -----	30.05	56.0	5.0	S.W.	29.95	65.8	7.1	S.W.	29.97	61.0	3.0	S.W.
8, Monday -----	29.93	55.5	1.0	S.E.	29.83	71.0	8.0	S.W.	29.86	70.0	6.0	N.E.
9, Tuesday -----	29.96	59.5	4.5	N.E.	30.03	58.0	4.5	N.E.	30.12	53.5	4.5	N.E.
10, Wednesday -----	30.06	53.0	4.7	N.E.	30.03	58.3	5.1	N.E.	30.04	53.5	3.5	N.E.
11, Thursday -----	29.93	47.5	2.5	N.E.	29.92	58.8	14.0	N.E.	29.87	54.3	6.2	N.E.
12, Friday -----	29.71	51.0	2.0	N.E.	29.68	54.0	2.2	N.E.	29.67	51.2	1.2	N.E.
13, Saturday -----	29.65	51.0	6.5	N.E.	29.66	59.0	5.5	N.	29.72	54.0	6.0	N.

14, Sunday	29.86	47.6	2.1	N.W.	29.84	51.3	5.5	N.	29.97	49.0	2.0	N.
15, Monday	29.95	50.7	4.7	N.W.	29.95	60.5	11.5	N.	30.05	55.0	8.0	N.
16, Tuesday	30.06	50.0	5.5	N.	30.02	64.0	14.0	N.	29.94	58.2	9.2	N.W.
17, Wednesday	29.77	56.0	2.4	N.W.	29.74	69.0	12.2	N.W.	29.78	59.2	6.2	N.
18, Thursday	29.90	50.2	3.2	N.W.	29.98	60.1	8.1	S.W.	30.05	51.5	2.5	W.
19, Friday	30.04	48.0	1.5	S.W.	30.04	63.0	7.0	S.W.	30.04	53.0	1.0	S.W.
20, Saturday	30.05	50.2	1.2	S.W.	30.03	64.0	6.0	S.W.	30.04	57.5	3.1	S.W.
21, Sunday	30.03	51.0	2.5	S.E.	30.01	63.8	13.6	S.E.	29.98	57.3	1.6	S.E.
22, Monday	29.82	58.0	1.0	S.E.	29.73	70.6	6.6	S.	29.74	60.6	2.0	S.
23, Tuesday	29.74	56.5	10.3	W.	29.65	62.6	10.6	S.W.	29.68	54.8	9.8	W.
24, Wednesday	29.69	43.2	6.2	N.W.	29.67	51.4	10.4	W.	29.73	42.6	6.0	N.W.
25, Thursday	29.88	42.0	4.8	N.W.	29.95	46.0	8.5	N.W.	30.04	40.0	6.5	N.W.
26, Friday	30.10	38.0	5.0	N.E.	29.94	48.1	6.5	N.E.	29.93	46.0	4.0	S.E.
27, Saturday	29.85	44.8	2.8	W.	29.87	51.0	6.5	W.	30.01	46.7	6.5	W.
28, Sunday	30.11	43.0	4.7	W.	30.10	54.5	9.0	S.E.	30.14	43.5	3.0	S.E.
29, Monday	30.05	50.6	3.6	S.E.	29.86	60.2	4.0	S.E.	29.79	61.5	4.0	S.E.
30, Tuesday	29.39	61.5	1.5	S.E.	29.32	60.0	5.5	W.	29.58	48.0	5.0	W.
31, Wednesday	29.67	41.8	3.8	W.	29.78	51.2	8.0	W.	29.95	43.8	5.8	W.
Nov. 1, Thursday	30.06	35.1	2.1	W.	30.04	46.0	7.0	W.	29.99	43.8	6.6	W.
2, Friday	29.86	43.0	4.0	W.	29.83	56.6	10.1	W.	29.96	53.0	7.3	W.
3, Saturday	30.10	40.0	3.0	W.	30.10	51.5	3.5	W.	30.16	47.0	5.0	W.
4, Sunday	30.21	49.0	3.8	W.	30.23	47.8	11.6	N.E.	30.28	41.8	6.8	N.E.
5, Monday	30.38	28.2	4.2	N.	30.35	37.4	22.5	5 N.	30.34	33.0	5.0	N.
6, Tuesday	30.32	31.0	3.8	N.	30.29	46.6	10.0	N.	30.27	40.6	5.5	N.W.

Meteorological Observations—Continued.

	7 o'Clock, A. M.				2 o'Clock, P. M.				9 o'Clock, P. M.			
	Barometer.	Thermometer.	Evaporation below.	Wind.	Barometer.	Thermometer.	Evaporation below.	Wind.	Barometer.	Thermometer.	Evaporation below.	Wind.
Nov. 7, Wednesday	30.13	34.0	3.7	N.W.	30.02	52.8	11.6	N.W.	30.00	45.1	8.1	W.
8, Thursday	29.89	41.7	3.7	W.	29.86	59.5	14.2	W.	29.94	52.0	9.0	S.W.
9, Friday	29.90	46.5	3.5	W.	29.90	61.0	11.5	W.	29.91	49.0	3.0	W.
10, Saturday	29.94	43.5	1.5	W.	29.88	63.5	12.5	W.	29.88	50.0	4.0	W.
11, Sunday	29.86	47.0	1.8	N.E.	29.78	60.3	6.1	N.E.	29.73	44.5	3.0	E.
12, Monday	29.82	46.7	4.6	N.W.	29.81	51.5	8.0	N.W.	29.99	44.0	4.5	N.W.
13, Tuesday	30.08	39.0	5.2	N.W.	30.10	47.0	9.0	N.W.	30.11	41.0	5.5	N.W.
14, Wednesday	30.13	41.0	4.0	N.N.E.	30.14	49.0	6.0	N.E.	30.13	44.5	2.5	N.E.
15, Thursday	29.88	51.3	2.3	N.E.	29.66	58.5	3.3	E.	29.44	58.7	1.7	S.E.
16, Friday	29.09	50.5	4.5	W.	29.28	48.7	7.6	E.	29.44	44.5	3.5	S.W.
17, Saturday	29.61	44.0	6.0	S.W.	29.69	50.0	7.0	W.	29.84	49.5	9.5	W.
18, Sunday	29.93	45.0	3.0	S.W.	29.89	51.0	6.0	S.W.	29.95	47.0	3.0	S.W.
19, Monday	29.94	46.5	2.5	S.W.	29.84	53.0	9.5	S.	29.74	53.0	3.9	S.E.

20, Tuesday	29.53	54.5	1.5	S.	29.49	58.5	2.5	S.	29.53	51.5	7.0	S.
21, Wednesday	29.65	47.0	8.0	E.	29.70	47.0	6.5	N.E.	29.73	47.0	7.5	W.
22, Thursday	29.70	41.5	3.5	S.W.	29.71	40.0	2.0	W.	29.68	39.5	1.5	N.W.
23, Friday	29.68	39.0	3.0	N.W.	29.77	36.0	1.0	N.W.	29.83	34.2	4.0	N.W.
24, Saturday	29.86	28.6	1.6	N.W.	29.90	34.0	3.0	N.W.	29.95	30.5	1.5	W.
25, Sunday	30.055	28.8	2.3	N.W.	30.09	32.0	3.0	N.W.	30.17	30.6	4.6	W.
26, Monday	30.218	29.5	2.1	W.	30.14	40.6	5.7	W.	30.15	37.0	3.0	W.
27, Tuesday	30.10	34.0	1.0	S.W.	29.99	47.2	4.2	S.W.	30.05	42.5	2.0	W.
28, Wednesday	29.99	44.0	1.0	N.E.	29.90	49.5	4.5	S.	29.83	46.5	2.2	S.
29, Thursday	29.69	46.0	1.5	S	29.51	51.0	2.5	S.	29.41	47.0	1.0	S.W.
30, Friday	29.39	46.0	2.5	W.	29.50	48.0	6.0	W.	29.75	39.0	7.0	N.W.
D.c. 1, Saturday	29.84	34.0	3.5	W.	29.88	37.0	4.5	W.	29.92	33.5	3.5	N.W.

Meteorological Observations—Continued.

	Thermometer, lowest point, night.	Daily mean of barometer.	Daily mean of temperature.	Daily ave. of humidity, saturation being 100.	Rain, inches.	REMARKS.		
						A. M.	P. M.	Night.
May 1, Tuesday	---	29.55	47.3	44.5	---	7, Cirrus & Nimbus.	10, Nimbus.	10, Nimbus.
2, Wednesday	---	29.37	44.6	70.8	1.13	10, Nimbus.	4, Cirro-Cumulus.	0, Clear.
3, Thursday	---	29.62	43.83	58.7	---	8, Cirro-Cumulus.	5, Cirro-Cumulus.	0, Clear.
4, Friday	---	29.51	51.8	34.6	---	0, Clear.	5, Cirro-Cumulus.	0, Clear.
5, Saturday	---	29.48	53.3	34.4	---	7, Cirrus.	3, Cirrus.	2, Cirrus.
Weekly mean	---	29.50	48.06	48.60	1.13			
6, Sunday	---	29.76	54.8	42.9	---	1, Cirrus.	6, Cirrus.	0, Clear.
7, Monday	---	29.96	53.2	43.3	---	0, Clear.	0, Clear.	0, Clear.
8, Tuesday	---	29.89	55.8	58.4	---	8, Cirrus.	3, Cirrus.	0, Clear.
9, Wednesday	---	29.61	60.5	61.1	0.9	10, Cirrus & Nimbus.	8, Cirrus & Cumulus.	10, Cirrus & Nimbus.
10, Thursday	---	29.77	61.2	52.2	---	5, Cirro-Stratus.	6, Cirro-Cumulus.	5, Cirrus.
11, Friday	---	29.82	61.3	74.9	---	8, Cirrus.	5, Cirrus.	0, Clear.
12, Saturday	---	29.73	64.3	59.6	---	0, Clear.	0, Clear.	0, Clear.
Weekly mean	---	29.79	58.72	56.05	0.9			

13, Sunday	29.57	62.3	59.2	.33	8, Cirrus.	5, Cirro-Cumulus.	2, Nimbus & Cirrus. Thunder-shower.
14, Monday	29.66	51.5	30.1	---	5, Cirro-Cumulus.	0, Clear.	0, Clear.
15, Tuesday	29.83	52.2	49.5	---	0, Clear.	0, Clear.	0, Clear.
16, Wednesday	29.63	63.5	62.5	---	0, Clear.	4, Cirrus.	10, Nimbus.—Thunder-shower.
17, Thursday	29.70	49.1	93.9	.53	10, Nimbus.	10, Nimbus.	10, Nimbus.
18, Friday	29.69	53.3	82.2	.16	10, Nimbus.	10, Nimbus.	0, Clear.
19, Saturday	29.66	61.7	57.1	---	8, Cirro-Cumulus.	3, Cirro-Cumulus.	
Weekly mean	29.67	56.22	62.07	1.02			
20, Sunday	29.58	61.6	62.0	---	0, Clear.	0, Clear.	0, Clear.
21, Monday	29.46	62.2	38.9	---	6, Cirro-Cumulus.— Th.-shower, slight.	6, Cirro-Cumulus.	0, Clear.
22, Tuesday	29.64	50.2	57.8	---	7, Cirro-Cumulus.	8, Cirro-Cumulus.	0, Clear.
23, Wednesday	20.87	51.7	49.7	---	0, Clear.	2, Cirrus.	0, Clear.
24, Thursday	29.88	56.8	57.0	---	5, Cirrus.	5, Cirrus.	0, Clear.
25, Friday	29.65	60.4	42.0	---	4, Cirrus.	6, Cirrus.	4, Cirrus.
26, Saturday	29.58	62.0	73.9	---	0, Clear.	2, Cirrus.	8, Cirrus & Nimbus.
Weekly mean	29.67	57.84	54.47	---			
27, Sunday	29.34	62.6	88.9	1.70	10, Nimbus.	7, Cirro-Cumulus.	10, Cirrus & Nimbus. Li. & Th.-shower.
28, Monday	29.27	60.9	65.1	---	10, Cirrus & Nimbus.	7, Cirro-Cumulus.	9, Cirro-Cumulus.
29, Tuesday	29.55	55.2	78.7	.52	7, Cirrus.	10, Nimbus.	8, Cirrus & Nimbus.

Meteorological Observations—Continued.

	Thermometer, lowest point, night.	Daily mean of barometer.	Daily mean of temperature.	Daily ave. of humidity, saturation being 100.	Rain, inches.	REMARKS.		
						A. M.	P. M.	Night.
May 30, Wednesday	---	29.55	58.7	52.7	---	5, Cirro-Cumulus.	5, Cirro-Cumulus.	2, Cirro-Stratus. — Rainbows.
31, Thursday	---	29.79	63.9	49.1	---	8, Cirrus & Nimbus.	4, Cirro-Cumulus.	0, Clear.
June 1, Friday	---	29.97	58.7	55.6	---	0, Clear.	7, Cirrus.	6, Cirro-Cumulus.
2, Saturday	---	29.87	58.2	78.4	---	10, Cirrus & Nimbus.	7, Cirrus.	3, Cirrus.
Weekly mean	---	29.62	59.74	66.92	2.22			
3, Sunday	---	29.72	58.16	92.6	---	10, Nimbus.—Rainy.	10, Nimbus.—Misty Rain.	10, Nimbus.—Rainy.
4, Monday	---	29.70	60.83	91.3	.63	10, Nimbus.—Rainy.	10, Cirrus and Nimbus.—Part. cld'y.	10, Cirrus and Nimbus.—Cloudy.
5, Tuesday	---	29.76	61.43	92.2	---	10, Cirrus and Nimbus.—Cloudy.	8, Cirrus. — Light Clouds.	10, Nimbus.—Misty.
6, Wednesday	---	29.67	67.73	81.8	---	10, Fog.	7, Cirrus. — Light Clouds.	4, Cirro-Cumulus. — Few clouds.

7, Thursday	29.59	66.33	61.8	.21	8, Cirro-Stratus. — Partial.	8, Cirrus and Nimbus.—Cloudy.	8, Cirro-Cumulus. — Rainy.
8, Friday	29.65	66.50	70.6	---	3, Cirro-Cumulus. — Variable.	8, Cirro-Cumulus. — Cloudy.	10, Nimbus.—Misty.
9, Saturday	29.75	66.50	58.5	---	6, Cirrus. — Light Clouds.	2, Cirrus.—Clear.	10, Cirrus.—Cloudy.
Weekly mean	29.69	63.92	78.4	.84			
10, Sunday	29.88	62.1	66.1	---	10, Cirrus and Nimbus.—Misty.	8, Cirrus.	0, Clear.
11, Monday	29.92	69.2	49.8	---	2, Cirrus.	2, Cirro-Cumulus.	0, Clear.
12, Tuesday	29.90	66.4	44.5	---	5, Cirro-Cumulus.	3, Cirrus.	9, Cirrus & Cumulus.
13, Wednesday	29.79	64.5	80.4	.5	10, Cirrus and Nimbus.—Thun.-sh'r.	10, Cirrus & Nimbus.	10, Nimbus.
14, Thursday	29.74	63.1	86.8	---	10, Misty.	10, Cirrus & Nimbus.	10, Nimbus.
15, Friday	29.64	72.0	65.2	---	7, Cirro-Stratus.	5, Cirrus.	5, Cirro-Cumulus. — Lightning.
16, Saturday	29.75	72.1	57.6	---	5, Cirro-Cumulus.	0, Clear.	0, Clear.
Weekly mean	29.80	67.05	64.34	.5			
17, Sunday	29.58	68.2	80.4	---	3, Cirrus.—Thunder-shower.	10, Nimbus.	10, Nimbus.
18, Monday	29.55	68.6	73.6	1.2	10, Nimbus & Cirrus.	3, Cirrus & Nimbus.	0, Clear.
19, Tuesday	29.75	64.6	57.0	---	0, Clear.	5, Cirro-Cumulus.	3, Cirro-Stratus.
20, Wednesday	29.96	66.4	62.0	---	0, Clear.	0, Clear.	0, Clear.
21, Thursday	29.94	71.7	66.9	---	0, Clear.	0, Clear.	0, Clear.

Meteorological Observations—Continued.

	Thermometer, lowest point, night.	Daily mean of barometer.	Daily mean of temperature.	Daily av. of humidity, saturation being 100.	Rain, inches.	REMARKS.		
						A. M.	P. M.	NIGHT.
June 22, Friday	---	29.79	73.9	67.4	---	2, Cirrus.	3, Cirrus.	9, Cirro-Cumulus.
23, Saturday	---	29.78	74.3	87.0	.75	10, Nimbus.—Thunder shower.	4, Cirro-Cumulus.	5, Cirrus—Rainbow, Thunder shower.
Weekly mean	---	29.76	69.67	70.6	1.77			
24, Sunday	---	29.90	74.5	77.3	---	9, Cirrus.	2, Cirrus.	3, Cirrus.
25, Monday	---	29.88	80.9	66.7	---	4, Cirro-Stratus.	3, Cirro-Cumulus.	4, Cumulo-Stratus—Lightning.
26, Tuesday	---	29.85	80.2	63.3	---	0, Clear.	0, Clear.	2, Cirrus.
27, Wednesday	---	29.66	81.3	75.2	---	3, Cirrus.	3, Cumulus.	9, Cumulus & Nimbus—Th. shower
28, Thursday	---	29.73	73.9	76.8	.87	10, Nimbus.	10, Nimbus & Cirrus.	8, Cumulus & Nimbus.
29, Friday	---	29.93	67.4	76.2	---	5, Cirro-Cumulus.	4, Cumulus.	9, Cumulus & Nimbus.

30, Saturday	30.01	67.7	75.2	.85	6, Cumulus.	9, Cumulus & Nimbus.	10, Nimbus.
Weekly mean	29.85	75.12	72.95	1.72			
July 1, Sunday	30.16	66.8	74.9	----	0, Clear.	0, Clear.	3, Stratus.
2, Monday	30.16	75.7	49.4	----	0, Clear.	1, Cirrus.	0, Clear.
3, Tuesday	29.95	82.3	61.3	----	1, Stratus.	1, Stratus.	1, Stratus.
4, Wednesday	29.83	75.5	73.1	.14	1, Stratus.	9, Cumulus.	6, Nimbus.
5, Thursday	29.95	80.2	78.9	----	8, Nimbus.	1, Cirrus.	0, Clear—Lightning
6, Friday	29.92	87.7	63.8	----	0, Clear.	4, Cumulus & Nimbus—Thunder shower, slight.	0, Clear.
7, Saturday	29.86	90.4	58.5	----	0, Clear.	2, Cirro-Cumulus.	1, Stratus.
Weekly mean	29.97	79.80	65.70	.14			
8, Sunday	29.82	87.0	62.9	.14	2, Cirro-Stratus.	3, Cumulus & Stratus.	9, Nimbus & Cumulo-Stratus—Th. shr.
9, Monday	29.96	73.5	75.5	----	7, Nimbus & Cumulus	10, Nimbus.	9, Nimbus.
10, Tuesday	30.15	68.2	61.0	----	6, Nimbus.	3, Cumulus.	1, Stratus.
11, Wednesday	30.08	77.1	43.4	----	0, Clear.	0, Clear.	0, Clear.
12, Thursday	29.94	82.0	56.3	----	0, Clear.	2, Cirro-Stratus.	0, Clear.
13, Friday	29.78	89.0	52.4	----	0, Clear.	0, Clear.	2, Cirro-Stratus.
14, Saturday	29.88	80.9	69.1	----	4, Cirro-Cumulus.	3, Cumulus.	0, Clear.
Weekly mean	29.94	79.67	60.1	.14			

Meteorological Observations—Continued.

	Thermometer, lowest point, night.	Daily mean of barometer.	Daily mean of temperature.	Daily ave. of humidity, saturation being 100.	Rain, inches.	REMARKS.		
						A. M.	P. M.	Night.
15, Sunday	83.0	29.94	88.8	53.2	---	0, Clear.	0, Clear.	0, Clear.
16, Monday	83.5	30.00	90.8	55.1	---	0, Clear.	2, Cirro-Cumulus.	0, Clear.
17, Tuesday	84.7	29.91	91.8	54.0	.02	1, Cirrus.	2, Cumulus.	8, Nimbus.—Th. sh'r.
18, Wednesday	78.6	29.65	88.2	64.0	---	1, Stratus.	6, Cumulus & Nimbus	6, Cumulus & Nimbus
19, Thursday	69.5	29.90	72.2	71.6	---	6, Nimbus.	2, Cumulus.—Thunder showers, light.	2, Cumulus.
20, Friday	67.8	30.05	71.0	74.4	---	6, Cumulus & Stratus	8, Cumulus & Nimbus	8, Cumulus.
21, Saturday	63.5	29.89	64.6	85.5	.30	10, Nimbus.	9, Nimbus.	10, Nimbus.
Weekly mean	---	29.91	81.05	65.40	.32			
22, Sunday	69.5	29.74	70.7	87.5	---	8, Nimbus.	8, Nimbus.	9, Nimbus.—Thunder sh'r in night.
23, Monday	69.8	29.65	77.7	60.6	---	3, Cumulus & Stratus	4, Cumulus.	1, Cumulus.
24, Tuesday	73.0	29.87	75.6	71.4	---	2, Cumulus.	1, Cumulus.	0, Clear.
25, Wednesday	63.0	29.90	77.7	71.4	.26	0, Clear.	6, Cumulus.	8, Nimbus.—Thunder shower.

26, Thursday	71.5	29.99	74.7	85.7	----	0, Clear.	3, Cumulus.	2, Stratus.
27, Friday	73.0	29.90	78.2	77.4	----	4, Cumulus.	4, Cumulus.	1, Stratus.
28, Saturday	----	29.69	74.9	86.6	.51	1, Cirrus.	8, Nimbus. — Thunder-shower.	0, Clear.
Weekly mean	----	29.72	75.64	77.3	.77			
29, Sunday	----	29.65	79.0	64.4	----	0, Clear.	3, Cumulus.	0, Clear.
30, Monday	65.6	29.71	75.2	75.6	.30	4, Cumulus.	2, Stratus.	10, Nimbus. — Thunder shower.
31, Tuesday	71.5	29.80	75.9	62.5	----	0, Clear.	2, Cumulus.	1, Stratus.
Aug. 1, Wednesday	----	29.79	80.5	53.8	.36	1, Stratus.	3, Cirro-Stratus.	4, Cumulus & Stratus
2, Thursday	----	29.69	78.6	72.2	----	7, Nimbus.	3, Cumulus.	7, Nimbus.
3, Friday	----	29.88	75.7	56.8	----	10, Cumulo-Stratus.	1, Cirrus.	0, Clear.
4, Saturday	----	29.79	76.0	74.2	.33	0, Clear.	7, Cumulus & Nimbus	10, Nimbus.
Weekly mean	----	29.75	77.27	65.64	.99			
5, Sunday	----	29.86	87.3	48.5	.92	0, Clear.	0, Clear.	0, Clear.
6, Monday	----	29.88	79.3	40.4	----	5, Cumulus.	5, Cumulus.	0, Clear.
7, Tuesday	----	28.90	79.5	35.0	----	2, Cirro-Stratus.	2, Cirrus.	2, Cirrus.
8, Wednesday	----	29.81	82.2	30.7	----	3, Cirrus & Stratus.	4, Cirro-Stratus.	8, Cumulus & Nimbus
9, Thursday	----	29.57	62.2	93.4	----	10, Nimbus.	10, Nimbus.	10, Nimbus.
10, Friday	----	29.79	66.7	50.4	----	0, Clear.	3, Cirro-Cumulus.	0, Clear.
11, Saturday	----	29.90	68.0	58.4	----	0, Clear.	0, Clear.	0, Clear.
Weekly mean	----	29.94	75.02	50.97	.92			

Meteorological Observations—Continued.

	Thermometer, lowest point, night.	Daily mean of barometer.	Daily mean of temperature.	Daily ave. of humidity, saturation being 100.	Rain, inches.	REMARKS.		
						A. M.	P. M.	Night.
Aug. 12, Sunday	---	29.99	70.2	68.8	---	2, Cirrus.	5, Cirrus & Cumulus.	6, Clear.
13, Monday	---	29.87	62.5	88.6	---	10, Nimbus.	10, Nimbus.	10, Nimbus.
14, Tuesday	---	29.72	66.5	88.4	.84	10, Nimbus.	9, Cirro-Cumulus.	10, Nimbus.
15, Wednesday	---	29.77	70.0	90.8	.75	8, Cirro-Cumulus.	5, Cirro-Cumulus.	2, Cirrus.
16, Thursday	---	29.89	62.2	60.3	---	8, Cirro-Cumulus.	2, Cirro-Cumulus.	0, Clear.
17, Friday	---	29.91	67.3	52.3	---	0, Clear.	3, Cirrus.	0, Clear.
18, Saturday	---	29.82	68.1	58.9	---	3, Cirrus.	3, Cirrus.	4, Cirrus.
Weekly mean	---	29.85	66.70	72.58	1.59			
19, Sunday	---	29.73	71.7	77.3	.68	10, Nimbus.	5, Cirro-Cumulus.	10, Nimbus.
20, Monday	---	29.64	68.2	60.6	---	9, Cumulus & Nimbus	3, Cumulus.	6, Cirro-Cumulus.
21, Tuesday	---	29.75	68.3	60.6	.05	0, Clear.	3, Cumulus & Cirrus.	10, Cirrus & Nimbus.
22, Wednesday	---	29.66	67.1	71.6	---	5, Cirrus.	2, Cumulus.	0, Clear.
23, Thursday	---	29.59	56.7	83.5	.88	10, Nimbus & Cirrus.	10, Nimbus.	8, Cirro-Cumulus.
24, Friday	---	29.73	58.8	63.8	---	2, Cirro-Stratus.	5, Cumulus.	2, Cirro-Cumulus.

25, Saturday	29.84	59.7	58.08	0, Clear.	5, Cumulus.	0, Clear.
Weekly mean	29.71	64.35	78.03	1.61		
26, Sunday	29.84	63.0	65.7	0, Clear.	2, Cirrus.	0, Clear.
27, Monday	29.86	65.5	60.5	0, Clear.	6, Cirrus.	0, Clear.
28, Tuesday	29.83	67.1	83.0	10, Cirrus & Nimbus.	8, Cirrus & Nimbus.	3, Cirrus.
29, Wednesday	29.75	66.3	85.8	10, Cirrus & Nimbus.	8, Cirrus & Nimbus.	10, Cirrus & Nimbus.
30, Thursday	29.74	68.0	72.8	5, Cirrus.	2, Cirrus.	3, Cumulus.
31, Friday	29.80	71.3	80.9	10, Fog.	9, Cirro-Cumulus.	10, Nimbus.
Sept. 1, Saturday	29.80	74.2	83.2	10, Nimbus.	5, Cirro-Cumulus.	10, Cirrus & Nimbus. Lightning.
Weekly mean	29.80	67.91	75.97			
2, Sunday	29.73	75.3	85.6	10, Nimbus.	6, Cirro-Cumulus.	1, Stratus.—Light- ning.
3, Monday	29.83	76.3	80.6	4, Cirrus.	3, Cirro-Cumulus.	3, Cumulus.—Light- ning.
4, Tuesday	29.74	71.4	88.6	10, Nimbus.	10, Cirrus.	10, Cirrus & Nimbus. Thunder-shower.
5, Wednesday	29.70	72.9	84.8	9, Cirrus & Nimbus.	6, Cirro-Cumulus.	0, Clear.—Lightn'g.
6, Thursday	29.86	68.8	61.9	6, Cirro-Cumulus.	3, Cirrus.	0, Clear.
7, Friday	29.79	69.1	74.5	8, Cirrus.	9, Cirrus & Nimbus.	10, Nimbus.
8, Saturday	29.67	70.1	60.4	7, Cirrus.	5, Cumulus.	0, Clear.
Weekly mean	29.76	71.98	75.91	.91		

Meteorological Observations—Continued.

	Thermometer, lowest point, night.	Daily mean of barometer.	Daily mean of temperature.	Daily ave. of humidity, saturation being 100.	Rain, inches.	REMARKS.		
						A. M.	P. M.	Night.
Sept. 9, Sunday	58.0	29.93	63.2	60.6	---	8, Cirrus & Nimbus.	3, Cirrus.	0, Clear.
10, Monday	53.0	29.97	62.0	68.8	---	0, Clear.	4, Cirro-Cumulus.	0, Clear.
11, Tuesday	57.0	29.76	66.0	88.2	.32	10, Cirrus.	10, Nimbus.	10, Nimbus.
12, Wednesday	62.0	29.61	72.0	67.7	---	4, Cirro-Cumulus.	3, Cumulus.	2, Stratus.—Aurora.
13, Thursday	62.0	29.76	67.0	53.2	---	0, Clear.	0, Clear.	0, Clear.
14, Friday	60.0	29.79	66.3	74.2	.32	9, Cirrus & Nimbus.	7, Cirrus & Nimbus.	5, Cirro-Cumulus.—Thunder-shower.
15, Saturday	52.0	29.96	55.3	72.3	---	0, Clear.	0, Clear.	2, Cirrus.
Weekly mean	---	29.82	64.54	72.14	.64			
16, Sunday	41.0	30.16	52.9	66.0	---	4, Cirro-Stratus.	2, Cirrus.	0, Clear.
17, Monday	48.0	29.88	65.0	78.8	---	9, Cirrus & Nimbus.	5, Cirrus.	5, Cirrus.
18, Tuesday	62.0	29.70	72.2	80.6	---	10, Fog.	9, Cirrus & Nimbus.	9, Cirrus & Nimbus.—Lightning.
19, Wednesday	61.0	29.68	70.5	86.6	.42	8, Cirrus & Cumulus.	9, Cirrus.	9, Cirrus & Nimbus.—Lightning.

20, Thursday	55.0	29.80	62.0	90.7	---	10, Cirrus & Nimbus.	10, Nimbus.	10, Nimbus.
21, Friday	59.0	29.64	68.8	86.3	.07	9, Fog.	6, Cirrus & Cumulus.	10, Nimbus.
22, Saturday	54.0	29.75	58.7	62.6	.42	0, Clear.	0, Clear.	0, Clear. --- Lightn'g.
Weekly mean	---	29.66	65.15	80.21	.91			
23, Sunday	40.0	30.06	54.4	65.0	---	0, Clear.	8, Cirro-Cumulus.	2, Cumulus.
24, Monday	43.0	30.12	58.1	74.2	---	0, Clear.	9, Cirrus & Nimbus.	10, Nimbus.
25, Tuesday	54.0	30.01	61.6	83.4	---	3, Cirrus.	3, Cirrus & Smoky.	0, Clear.
26, Wednesday	56.0	29.72	62.9	93.3	---	10, Nimbus.	10, Nimbus.	10, Nimbus. --- Th. sh'r.
27, Thursday	47.0	29.94	60.5	72.9	1.80	2, Cirrus.	0, Clear.	0, Clear.
28, Friday	52.0	29.15	69.3	55.2	---	0, Clear.	6, Cirrus.	8, Cirro-Cumulus.
29, Saturday	54.0	30.07	63.3	77.2	---	4, Cirrus.	9, Cirrus & Nimbus.	10, Nimbus.
Weekly mean	---	29.87	60.72	74.45	1.80			
30, Sunday	57.0	29.87	65.3	78.7	.04	10, Nimbus.	5, Cirrus & Nimbus.	5, Cirrus.
Oct. 1, Monday	56.0	29.97	60.8	68.7	---	5, Cirrus.	3, Cirrus.	0, Clear.
2, Tuesday	52.0	29.85	61.6	81.4	---	3, Cirrus.	3, Smoky.	2, Cirro-Stratus.
3, Wednesday	57.0	29.69	57.3	70.1	---	Smoky.	5, Cirrus.	0, Clear.
4, Thursday	39.0	30.00	45.7	47.0	---	Smoky.	2, Cumulus.	0, Clear. --- Aurora Borealis.
5, Friday	36.0	30.36	43.9	51.2	---	0, Clear.	0, Clear.	2, Cirrus.
6, Saturday	40.0	30.33	53.0	63.8	---	3, Cirrus.	2, Cirrus.	0, Clear.
Weekly mean	---	30.01	55.37	65.84	.04			

Meteorological Observations—Continued.

	Thermometer, lowest point, night.	Daily mean of barometer.	Daily mean of temperature.	Daily ave. of humidity, saturation being 100.	Rain, inches.	REMARKS.		
						A. M.	P. M.	Night.
Oct. 7, Sunday	48.0	29.99	60.9	69.6	---	0, Clear.	2, Cirrus & Smoky.	3, Cirrus.
8, Monday	55.0	29.87	65.5	75.2	---	Smoky.	3, Cirrus & Smoky.	0, Clear.
9, Tuesday	59.0	30.03	57.0	72.0	---	3, Cirrus.	10, Cirrus & Nimbus.	10, Cirrus & Nimbus.
10, Wednesday	46.0	30.04	54.9	72.5	---	8, Cirrus & Nimbus.	10, Cirrus & Nimbus.	9, Cirrus.
11, Thursday	45.0	29.90	53.5	70.8	---	10, Cirrus & Nimbus.	8, Cirrus.	10, Cirrus & Nimbus.
12, Friday	47.0	29.68	52.2	61.7	.64	10, Nimbus.	10, Nimbus.	10, Nimbus.
13, Saturday	44.0	29.68	54.7	61.3	---	9, Cirrus.	6, Cirro-Cumulus.	0, Clear.—Aurora Borealis.
Weekly mean	---	29.88	56.95	69.01	.64			
14, Sunday	45.0	29.89	49.3	77.3	.16	7, Cirrus & Nimbus.	9, Cirrus & Nimbus.	10, Nimbus.
15, Monday	46.0	29.98	55.4	51.9	---	3, Cirro-Cumulus.	2, Cirrus.	0, Clear.
16, Tuesday	48.0	30.00	57.5	46.0	---	0, Clear.	Clear.	0, Clear.
17, Wednesday	51.0	29.76	61.4	54.4	---	4, Stratus.	Clear, sky light and blue.	Clear.
18, Thursday	50.0	29.98	53.9	71.9	---	2, Stratus.	Clear.	Clear.
19, Friday	47.0	30.04	54.9	81.2	---	0, Clear.	Clear.	Clear.

20, Saturday	49.0	30.04	57.2	77.2	----	3, Stratus.	Clear.	Clear.
Weekly mean	----	29.95	55.65	65.70	.16			
21, Sunday	47.0	30.00	57.4	41.6	----	Foggy.	Clear.	5, Cirrus.—Lunar halo
22, Monday	53.0	29.76	63.1	83.3	.14	6, Cirrus.	9, Cirrus & Nimbus.	10, Nimbus.
23, Tuesday	56.0	29.69	57.9	41.4	----	7, Cirrus.	Clear.	Clear.
24, Wednesday	43.0	29.70	45.7	47.0	----	Clear.	5, Cirro-Cumulus.	4, Cirrus.
25, Thursday	42.0	29.96	42.7	46.6	----	8, Cirrus & Nimbus.	7, Cirro-Cumulus.	Clear.
26, Friday	35.0	29.99	44.0	58.4	----	8, Cirrus & Nimbus.	10, Cirrus & Nimbus.	10, Cirrus & Nimbus.
27, Saturday	44.0	29.91	47.5	62.1	----	7, Cirro-Cumulus.	3, Cirro-Cumulus.	Clear.
Weekly mean	----	29.86	51.20	54.34	.14			
28, Sunday	39.0	30.11	47.0	60.2	----	5, Cirro-Cumulus.	5, Cirro-Cumulus.	1, Cirrus.
29, Monday	48.0	29.90	57.4	76.2	----	9, Cirrus & Nimbus.	10, Cirrus & Nimbus	10, Cirrus & Nimbus.
30, Tuesday	60.0	29.39	56.5	78.1	----	10, Nimbus.—S. E. Violent storm.	8, Cirro-Cumulus.	S. E. Violent storm. Clear.
31, Wednesday	41.0	29.80	45.6	57.2	4.34	Clear.	5, Cumulus.	5, Cirro-Cumulus.
Nov. 1, Thursday	35.0	30.03	41.6	58.2	----	Clear.	Clear.	Clear.
2, Friday	42.0	29.88	50.9	50.1	----	3, Cirrus.	2, Cirrus.	Clear.
3, Saturday	38.0	30.12	46.2	70.5	----	5, Cirrus.—Red Sun- rise.	7, Cirrus.	10, Cirrus & Nimbus.
Weekly mean	----	29.89	49.31	64.35	4.34			

N. B.—More water fell during the twelve hours on 29th and 30th than I have known in the same time for thirty years.—*Observer.*

Meteorological Observations—Continued.

	Thermometer, lowest point, night.	Daily mean of barometer.	Daily mean of temperature.	Daily av. of humidity, saturation being 100.	Rain, inches.	REMARKS.		
						A. M.	P. M.	Night.
Nov. 4, Sunday	37	30.24	43.2	47.2	---	7, Cirrus.—Solar halo.	8, Cirrus.	7, Cirrus.
5, Monday	26	30.36	32.9	48.2	---	0, Clear.	0, Clear.	0, Clear.—Meteor.
6, Tuesday	29	30.29	39.4	48.6	---	0, Clear.	0, Clear.	0, Clear.—Meteor.
7, Wednesday	33	30.05	44.0	43.8	---	2, Cirrus.—Red Sun-rise.	1, Cirrus.	0, Clear.
8, Thursday	40	29.90	51.1	44.6	---	0, Clear.	0, Clear,	3, Cirro-Stratus.
9, Friday	45	29.90	52.2	64.0	---	5, Cirrus.—Red Sun-rise.	9, Cirrus.	0, Clear.
10, Saturday	41	29.90	52.3	64.9	---	0, Clear.	0, Clear.	3, Cirrus.
Weekly mean	---	30.09	45.01	51.61	---			
11, Sunday	45	29.79	50.6	58.4	.34	8, Cirrus.	8, Cirrus & Nimbus.	10, Nimbus.
12, Monday	46	29.82	47.4	58.3	---	9, Cirrus & Nimbus.	7, Cirrus.	0, Clear.
13, Tuesday	39	30.10	42.3	46.8	---	0, Clear.	0, Clear.	2, Cirro-Stratus.
14, Wednesday	35	30.13	44.8	67.3	---	7, Cirrus.	9, Cirrus & Nimbus.	16, Meteors, 0, Clear.

15, Thursday	44	29.66	56.2	86.1	----	10, Cirrus & Nimbus.	10, Cirrus & Nimbus.	10, Nimbus.
16, Friday	50	29.27	54.6	63.2	1.95	3, Cirrus & Nimbus	5, Cumulus.	0, Clear.
17, Saturday	40	29.71	47.8	46.2	.50	2, Cirro-Stratus.	8, Cirro-Stratus.	10, Cirrus & Nimbus.
Weekly mean	----	29.78	49.10	60.90	2.79			
18, Sunday	43	29.93	47.7	70.8	----	7, Cumulo-Stratus.	5, Cumulus.	4, Cirrus.
19, Monday	45	29.91	50.8	65.0	.13	7, Nimbus.	7, Nimbus.	9, Nimbus.
20, Tuesday	46	29.52	54.8	75.8	----	10, Nimbus.	9, Cirro-Stratus.	0, Clear.
21, Wednesday	42	29.70	47.0	45.6	.09	4, Cirrus & Nimbus.	7, Nimbus.—Snow, slight.	5, Cirro-Stratus.
22, Thursday	38	29.69	40.3	79.4	----	10, Cirrus & Nimbus.	10, Nimbus.	10, Nimbus.
23, Friday	35	29.76	36.4	74.8	----	10, Nimbus.	10, Nimbus.	8, Nimbus & Stratus.
24, Saturday	28	29.90	31.0	79.3	----	1, Stratus.	3, Cumulus.	10, Cirrus & Nimbus.
Weekly mean	----	29.77	44.00	70.10	.22			
25, Sunday	27.0	30.10	30.5	63.3	----	3, Cirrus & Nimbus. Snow, slight.	0, Clear.	0, Clear.
26, Monday	28.0	30.17	39.4	66.6	----	0, Clear.	6, Cirrus.	0, Clear.
27, Tuesday	33.0	30.05	41.2	80.7	----	10, Clear.	10, Clear.—Misty.	10, Clear.—Misty.
28, Wednesday	42.0	29.90	46.7	81.2	----	10, Cirrus & Nimbus.	10, Nimbus.—Misty.	10, Nimbus.—Misty.
29, Thursday	41.6	29.54	48.0	87.5	----	10, Nimbus.—Misty.	10, Nimbus.—Misty.	10, Nimbus.—Misty.
30, Friday	41.0	29.55	44.3	57.9	.83	10, Nimbus.—Misty.	5, Cirro-Cumulus.	10, Cirrus & Nimbus.
Dec. 1, Saturday	33.0	29.88	34.8	62.9	----	3, Cirro-Stratus.	3, Cirro-Cumulus.	0, Clear.
Weekly mean	----	29.88	40.70	71.44	.83			

RECORDS OF CHOLERA UPON THE ISLANDS OF THE EAST RIVER,

VIZ:

IN THE INSTITUTIONS UPON BLACKWELL'S ISLAND,
RANDALL'S ISLAND, WARD'S ISLAND, AND ON GOV-
ERNOR'S, HART'S AND DAVID'S ISLANDS.

In the public institutions that exclusively occupy the islands of the East river, the recent epidemic claimed more victims than in the entire city of New York. The records of cholera upon those islands throw much light upon the whole history of the epidemic as it prevailed in the Metropolitan district.

In preceding pages we have mentioned the dates and certain leading facts relating to the commencement and progress of cholera upon these islands. We now submit the statistical records and such portions of the circumstantial history of the pestilence there as are completed. Another portion of this history remains to be completed, and as it has most important relations to the general history of the present visitation of cholera upon this continent, that portion will hereafter be submitted as a section of that history. But the records here subjoined constitute an essential part of the local history of the pestilence in New York city.

THE SANITARY TOPOGRAPHY AND DESCRIPTION OF THE ISLANDS.

From the head of the East river, at Long Island Sound, to its debouchment into the bay of New York, at Governor's Island, the narrow islands and inlets which beautify and divert its ship channels, have been assigned to such public uses and occupation as, in the presence of an epidemic, enable us to trace with much accuracy the precise dates and methods of the epidemic phenomena. And among the first facts to be noticed concerning the epidemiology of these islands and their public institutions, is their natural sanitary condition.

The Geology and Soil of the Islands.—The entire series of the East river islands is simply a line of rocky reefs of coarse gneiss,

well worn to irregular flatness by diluvial forces that have left a thin soil covering portions of the gray rock.

Governor's Island, the first in the series where cholera appeared (the first week in July), is most elevated, has the deepest soil, the least area, and the best natural drainage. Midway between the first ward in New York and the twelfth ward in Brooklyn, it is an important fact that cholera reached the military quarters of that rigidly policed island in the person of a recruit from Minnesota, who tarried in the cholera field of the first ward in New York before crossing over to the island. Nothing in the soil and condition of that island invited cholera, except that the military quarters there contained a large population upon a soil so porous and moist, as to answer well the conditions that have been found to favor the retention and increase of the cholera poison.

Blackwell's Island, the next in the series, and four miles up the river, northward, is but a bare rock, water-worn almost to the tidal level, so that in its entire length of nearly two miles it is nowhere many inches above fifteen feet from the water, and covered with a thin artificial soil wherever the bare gneiss is not at present exposed. Throughout its entire extent, it is at all times kept in a good condition of sanitary police. The Croton gives the entire water supply. The natural drainage cannot be said to be perfect, because the surface of the worn rock presents some basins that retain a limited amount of water; but it is by no means certain that this circumstance had anything to do with the fatal work of cholera there. There is more probability that the privies and sewers connected with the several edifices were concerned in propagating, or, at least, in localizing the infection.

Average population of the Blackwell's Island institutions, in summer, about 4,500. First case of cholera, July 9th. Total deaths, 360.

Ward's Island, the next in the series, has essentially the same geological characteristics as that last described; but it has, upon a considerable portion of its rocky base, a good depth of diluvial soil, and is, consequently, elevated several feet higher above tide-water than Blackwell's Island. Potter's Field occupies the southern and low-lying extremity of the island, and in that section there was much to invite and localize the cholera. A great portion of the poor who died of cholera in New York city were buried in rough coffins and shallow trenches, in that last resting-place of the friendless poor. The salubrity of that island is unfavorably

affected by such near presence of great masses of dead bodies. The sanitary police of all the grounds pertaining to the New York State Emigrants' Refuge and Hospital, which cholera sadly ravaged, is generally unexceptionable; but some of the buildings, and much of the porous soil of that island, would offer strong localizing conditions for cholera. How much the contaminated sewers and soil about the buildings had to do with the epidemic visitation there, it would now be impossible to say.

Average population, 900. First case of cholera, July 21st. Total deaths, 172.

Randall's Island, a continuation of the same rocky bed, and separated from Ward's Island by a narrow channel but a few yards in width, has a deeper and richer soil, and is a little more elevated from the tide-level than any of the series, except Governor's Island. The grounds, the edifices, and the population—a strange grouping of distinct classes and conditions of childhood—the innocent and the vicious, the puny, the imbecile, and the strong, are all rare models of sanitary care and strict police. Like the two last mentioned islands, this also is supplied with Croton water.

Average population, 1,000. *Nursery*.—First case of cholera, July 29. Total deaths, 10. *Idiot House*.—First case of cholera, July 29th. Total deaths, 15. *House of Refuge*.—First case of cholera, August 1st. Total deaths, 2.

Hart's Island and *David's Island*, like the islands south of them, here described, are incompletely covered rocky beds, with good patches of soil, that during military occupation in the last three years of the war became saturated with, and covered by, organic matter. Crowded with recruited soldiers and unsettled military detachments, those two islands successively invited the localization of the choleraic poison.

REPORT OF CHOLERA IN THE BLACKWELL'S ISLAND INSTITUTIONS.

From the first appearance of the cholera on Blackwell's Island, it was so manifestly a duty to watch every movement and record of the epidemic in the populous institutions there, that we sought for information upon every particular daily. The commissioners of Public Charities afforded every facility, and, with scrupulous attention, kept the Board of Health informed of every event. The daily arrival and departure of inmates in the institutions there rendered that island a sort of colony of the worst slums and cholera fields of New York, and between them there was, by penal,

commitments, by hospital patients, and by various kinds of intercourse, no cessation of the well known channels of personal and infectious communication with all the cholera fields of the city, and, *mutatis mutandis*, with all the perils that might overtake the prisoners, paupers, hospital inmates, and lunatics in the island institutions.

Prof. Frank H. Hamilton, a gentleman no less accomplished as a practical hygeist than as a surgeon and medical teacher, was chairman of the committee of inspection for the medical board of the island institutions, under the Commissioners of Public Charities. His prompt official action, and the judicious transfer to him of *full authority*, by the Commissioners of Charities, to do whatever would arrest the pestilence, and save the thousands of poor creatures whom it menaced, are events never to be forgotten. Definite and well-directed sanitary measures speedily quelled the violence of the epidemic, and saved a multitude of lives.

The course pursued by the epidemic in those institutions is correctly represented in the accompanying diagram, and the map shows the relative positions of the several edifices and departments; but fully to appreciate what it is to superintend and to execute the details of sanitary service in such an assemblage of paupers, lunatics, hospital inmates, and prisoners of every grade—a mass of nearly 5,000 persons chronically diseased in body or in mind—those institutions and their inmates must be seen. Prof. Hamilton, keenly alive to his responsibility, daily visited and gave orders in the institutions. But the medical and official staff, overburdened with care, had to trust to ignorant subordinates and inmates, many very important details relating to cleansing and ventilation. Both at the lunatic asylum and the workhouse, for example, the immediate boiling of all clothing from the cholera sick, was intrusted to persons who stupidly postponed and often failed in that duty. Again, after a second outbreak or increase of the infection in the workhouse, Prof. Hamilton discovered a second unguarded and much frequented privy in use by the female prisoners. He also found that orders for the dispersion of the female and infant occupants of the almshouse and the constant ventilation of their apartments, were not well executed, until the Commissioners of Charities, by his request, *provided tents for the infants and nurses, and then turned all the women out of the house, and locked them out* for a great portion of the day. It was then ascertained, also, that a large public privy was very offensive at

low tide. These and similar defects in the sanitary police—in-
evitable though they seem to have been—are not overlooked in the
history of cholera on Blackwell's Island.

During the abatement of the pestilence in those institutions, we
requested Prof. Hamilton to transmit to the Board of Health an
official copy of the records of the epidemic on the Island. Those
records have this day been completed, and the subjoined pages
contain them. They not only agree with all we had learned and
recorded during the visitation, but they possess an inherent value
and significance, which no other testimony and report concerning
the epidemic in those institutions could have, for every fact and
every line here given, has been reviewed by the intelligent and
scrupulously faithful eye-witnesses, who, in the responsible official
service of those institutions, confronted the pestilence day by day,
and night after night, from the beginning to the end of its fearful
visit. To Prof. Hamilton and all the resident medical officers,
honors and thanks are due from the city. They applied the most
available resources of hygiene, and the measure of their success
corresponded with the constancy of their personal superintendence
of details in the sanitary work. To Dr. Yale, and his associate,
Dr. Castle, who labored unceasingly in that work, and now have
contributed the special records which are given in the following
pages relating to the Blackwell's Island experience in the epidemic,
no higher testimony to their professional intelligence and zeal
could be awarded, than the subjoined report by Dr. Yale contains.
The statistics relating to the epidemic in the institutions on Ward's
and Randall's Islands, and those relating to the military establish-
ments upon the other islands, we have appended in pages follow-
ing Dr. Yale's report, in order to give completeness to the records
of this visitation of a pestilence with which we may soon have to
grapple again. These various records, though not yet in every
respect complete, are important for the information of the Board
and the public generally.

E. H.

RECORD OF CHOLERA ON BLACKWELL'S ISLAND.

TO FRANK H. HAMILTON, M. D., *Chairman of the Committee of Inspection of Medical Board of Charity Hospital:*

Dear Sir: In accordance with directions given me by you "to receive from the several departments the various cholera reports, to be verified and consolidated," the following report has been prepared, and is respectfully submitted.

The reports received are as follows:

For the General Hospital Penitentiary and Ward's Island—
From Dr. Joseph O'Dwyer, Sanitary Superintendent General Hospital.

For the Almshouse—From Dr. Lyman Ware, in charge.

For the Workhouse—From Dr. Richard L. Sykes, in charge.

For the Lunatic Asylum—From Dr. R. L. Parsons, Resident Physician.

In discussing the epidemic, the following order may be advantageously adopted:

1st. What was its clinical history, and what were the post-mortem appearances?

2d. Where was its points of origin, and what its course of spread?

3d. What circumstances existed which might act as accessory causes for its initiation or continuance?

4th. What hygienic measures were adopted for its suppression, and with what success?

5th. Therapeutics.

First (a). The *clinical history* of this epidemic need not be dwelt upon at any length, since, as far as observed, it differed in no material point from that of other epidemics, with which every one is familiar. Enough, however, of its characters may be mentioned to establish it as truly epidemic cholera.

First, in a large proportion of cases—precisely what proportion cannot now be ascertained, but certainly a majority—"premonitory diarrhœa" existed. This diarrhœa varied in its duration from a

few hours to a few days. Very often it was neglected partially or wholly, as of no importance; or, later in the epidemic, concealed by the sick for fear of being sent to the cholera ward if discovered.

Succeeding to this "premonitory diarrhœa" were the dejections commonly known as "rice water;" together with copious vomiting of a watery fluid. The "rice water" discharges were stained of a variety of colors, sometimes of muddy hue, at others greenish, blueish, red or black; while again they remained nearly as colorless as pure water, or a pale amber-like serum of the blood. The thirst was excessive, or even quite insatiable; the drink almost immediately rejected. Muscular cramps generally occurred quite early; usually confined to (1st) the extensor, and (2d) flexor muscles of the leg and foot; occasionally appearing in the abductors of the thigh; very rarely in the abdomen, or upper extremities or face.

Upon these symptoms, in the unfavorable cases—which, unfortunately, were the large majority—those of collapse speedily supervened: namely, marked interference with the circulation, shown by the pulse, rapid, and often unrecognizable at the wrist; by the coldness and lividity of the lips, tongue, and surface, the patient meanwhile complaining of insufferable heat. In addition, the shrivelled, inelastic skin, the sunken eye, with its injected conjunctiva, the pinched features, and the peculiar, almost pathognomonic, *vox choleraica*. The combination of these symptoms—the stage of collapse namely—usually heralded a speedy death. For of the twenty-five per cent. that recovered, quite a large part had not passed into the stage of collapse.

Very few, if any, cases presented the symptoms usually described as constituting the stage of reaction. Of those who escaped collapse, some recovered speedily, so as to be able, in a day or two, to attend to their usual duties, or to nurse the sick; while others of these, together with those to whom the stage of collapse did not prove immediately fatal, remained in a state either typhoid or of great debility, with such irritability of stomach as to prevent the retention of food. A large proportion of these died, the remainder convalesced more or less slowly; some not having recovered their usual health after the lapse of two months.

The usual clearness of intellect continued throughout the attack in nearly every instance.

The average duration of attack at asylum is stated as fifty-six

hours. For the other institutions it is not definitely stated, but would probably be not longer than forty-eight hours.

The peculiar post-mortem muscular contractions were often noticed.

(b.) The *post-mortem appearances* are described in the following letter from Dr. J. Lewis Smith :

Dear Doctor—Your note requesting me to furnish you any interesting or useful facts which I may have observed in reference to the recent epidemic of cholera on Blackwell's Island, has been received. I do not know that I can send you any particulars with which you are not already familiar, except the post-mortem appearances. During the epidemic I made, or witnessed, about twenty autopsies of cholera cases, most of which were on the island, but a few in Bellvue hospital (a little more than twenty in all, according to my recollection, for I preserved no records), and I will state briefly the appearance and condition of the fluids and viscera so far as I examined them.

"The blood was in all cases very thick and dark, like treacle. Its specific gravity was never less than 1058, and was ordinarily between this and 1065. Unfortunately, the urinometer which I used was not graduated so as to indicate the specific gravity in the cases in which the blood was thickest, but I think it did not exceed 1070 in any of those examined. Clots, usually dark, were found in the cavities of the heart ; and the blood which I examined with the microscope was always taken from this organ, kept in a closely-corked bottle, and examined soon afterwards.

"I did not notice, as a rule, any relative increase in the number of white corpuscles, as stated by Virchow. The largest proportion which I observed was one white corpuscle to from thirty to forty blood discs, while ordinarily the proportion was much less. The discs were usually aggregated so as to slowly move in masses across the field of the microscope, when considerable inclination was given to the slide. The white corpuscles, on the other hand, were usually single ; in one or two instances I found these bodies aggregated, but then, I concluded, I was examining fragments of clots from the ventricle.

"The shape of the blood discs was very irregular. Some were serrated, others apparently compressed, and others, still, of natural form. I believe the size of all was somewhat diminished from exosmosis. In one case I found blood-crystals (hæmatoidine) mixed with the discs, although not numerous. From the deficiency

of serum, and aggregation of the blood discs, the state of the blood was such that it must have been very much obstructed in the capillaries; the aggregate amount of blood was also much diminished.

"In all the examinations on the island we found a large amount of liquid in the stomach and intestines; and I believe the same was true in Bellevue hospital. This is an important fact, since some recent writers have attempted to show that death in this disease does not occur from the loss of the liquid portion of the blood, reasoning from the fact that some die without a sufficient number of evacuations to diminish materially the amount of liquor sanguinis. The quantity of liquid observed in the stomach and intestines in the cases which we examined, afforded sufficient proof that the blood may lose a considerable part of its serum while the evacuations are scanty.

"This liquid sometimes had the appearance of rice-water, sometimes a dirtier color, like dish-water, and sometimes it was tinged by the coloring matter of the blood. In no case—certainly in no recent case—was it at all fecal; it had the peculiar musty odor which characterizes the evacuations in this disease.

"In a few instances I made microscopic examination of the fluid in the small intestines. The flocculi seemed to consist largely of epithelia, more or less disintegrated. I also observed, occasionally, blood crystals, and other crystals which I supposed to be those of the salts contained in the blood, and which had escaped from the vessels with the serum.

"The peritoneum sometimes seemed more dry than in the healthy state; but in other cases there was no notable alteration in this membrane.

"The intestines, viewed externally through the peritoneum, presented an injected appearance, more so than I have seen in any other disease. This injection was usually more marked in the small intestine than in the stomach or colon; and frequently it was also observed in the mesentery. The gastro-intestinal mucous membrane, in all cases, unless one, was highly injected. This appearance was sometimes observed in every division of the digestive tube below the cardiac orifice of the stomach. It was always present, unless in the excepted case, in the small intestine, and ordinarily present in the colon; while in the stomach, though common, it was oftener absent than elsewhere. Whenever absent (the injection) the mucous membrane usually presented a pale, sodden

and thickened appearance, as if from maceration. In recent cases the color of the injected surface was a bright red; and this fact we considered an argument in favor of its inflammatory rather than simply congestive character. Moreover, in simple congestion we would expect more continuous vascularity than was observed in many of these cases.

"Sometimes, but not in all cases, the solitary follicles and Peyer's patches were considerably elevated and enlarged, but in no examination were they found ulcerated.

"The bladder was uniformly nearly or quite empty. Scantiness, or even absence of urine, was observed in the cases treated on Blackwell's Island, as it has been elsewhere. In one case in this city, occurring in private practice, the patient lived five days without voiding any urine during that time. It seems now well established that retention of urine is a frequent cause of death in cholera cases. The arrest of the urinary secretion is readily explained by the diminished fluidity of the blood.

"The lungs and solid organs presented no unusual appearance, except such as was due to the dark color and the altered consistence of the blood; unless in one case, examined about twelve hours after death, in which we found one or two bubbles in a cerebral vein, and in regard to which the question arose whether it was not carbonic acid, since the quantity of this gas is, doubtless, greatly in excess in those who die of cholera.

"Yours truly,

(Signed)

"J. LEWIS SMITH."

Second.—Its point of origin and course of spread.

It will be proper to mention here three cases, which, before the cholera had assumed an epidemic form, had occurred, apparently sporadically, at the Charity hospital.

These were:

1st. John McGowan, who had been for six weeks under treatment for ulcer in male ward 8, was seized, on the 9th day of July, with cholera, the discharges being quite characteristic. The patient recovered. The only predisposing cause that could be suggested in his case, was that he had been for nearly a year troubled with attacks of diarrhœa; and that one of these of a week or ten days' duration, had immediately preceded that of the cholera. During the whole season no other cases appeared in this ward.

2d. Eleven days later, on the 20th of July, James Hatton, a [Assem. No. 241.]

deck hand on the steamer "Bellevue," who had been suffering for some days from some form of bowel complaint, was brought from the dock to ward 5, in a state of collapse, and died the next morning at 5 o'clock. As far as can be ascertained he had had no connection with any other case of cholera, or cadaver dead of that disease.

3d. July 22d, the day following Hatton's death, Thomas Conroy, while employed as nurse to a surgical patient, in a tent midway between the fever and small pox hospital, was seized with cholera and recovered. He is not known to have had any connection with either of the previous cases, or with the body of Hatton.

This last case occurred upon the same day as the first at the work house, but cholera now disappeared from the hospital for nine or ten days, when it was reached by the epidemic in its spread.

Disregarding, then, these three cases, the first case known to be cholera, and patently connected with the epidemic, occurred in the female (northern) wing of the work house, on the night of the 22d of July, in the person of Fanny Little, terminating fatally in about twelve hours.

The following day a case, fatal in three hours, occurred in pavilion "B" of the lunatic asylum, the patient, Maria Tracy, having been, till within a day or two, an inmate of the "retreat" of the asylum. On the 25th another appeared in the main building of the asylum; on the 26th, another in the same locality, with a second in pavilion "B", and two in the "retreat." On the midnight of the 26th and 27th the cholera reappeared at the work house with great violence, sixteen cases becoming developed before the expiration of twenty-four hours.

The relation of these buildings will be understood by referring to the accompanying map, which is a copy of a very accurate one prepared by my friend Dr. Frederick A. Castle, of the Charity hospital staff. It will be seen that the "retreat" (4) is quite close to the work house (5). The main building of the asylum is marked (1), the lodge (2), the pavilions are lettered.

From the 27th it raged at the work house, and simultaneously, but less severely, at the asylum. The majority of cases, at first, being in the northern wing in the former institution, and in the "retreat" in the latter, though none of the various buildings escaped.

The spread of the cholera from the female to the male wing of the work house was not rapid, as the following table will show :

Date.	Male cases.	Female cases.
July 27	*1	15
28	1	11
29	1	3
30	2	9
31	2	10
Aug. 1	5	14
2	11	22
3	18	12
4	9	12
5	6	6
6	2	2
7	--	1
8	1	1
9	--	1
10	--	1

On the 30th, the first case at the almshouse appeared in the female pavilion (numbered 9 on the map), which is at quite a distance from the work-house; the buildings connected with the male almshouse having been quite passed over. In this female pavilion four were seized on the 30th, nine on the 31st, with a single case in the male building. On the following day one case occurred in the female building. For a few days cases still were quite frequent in the pavilion, but afterward chiefly were among the women in the female building.

In addition to this, there was a remarkable mortality among the children at the female almshouse during the prevalence of the cholera. These are not included in the lists of cases, but Dr. J. Lewis Smith, visiting physician to the Charity hospital, assures me that he is satisfied from the post-mortem appearances, that many of these children died of epidemic cholera rather than from the entero-colitis, and kindred diseases, usually prevalent among them. The testimony of the house physician, Dr. D. W. Searles, is to the same effect. The relative mortality during the prevalence of the cholera and the weeks preceding, as well as during the corresponding months of 1865, is shown in Appendix F.

The cholera had appeared at the penitentiary on the same day

* Sick when admitted to house from city.

as at the almshouse, the 30th of July; but here it prevailed but slightly—only 19 cases, with seven deaths, being reported in all.

Its reappearance at the Charity hospital was on the 31st of July, in the person of Ann Swift, who had that day been transferred from the work-house, where she had for several days been in the cholera ward, but with no manifestations of choleraic symptoms. On the 3d of August, Eliza Cowan, with two or three others, who had been under treatment for cholera at the work-house, was transferred to the hospital as convalescent. Cowan died on the 5th, but in the meantime, on the 3d, 4th, and 5th, quite a number of cases had been developed; on the last-named day one case occurring at the Small-pox hospital. The epidemic had thus reached from one extremity of the island to the other.

The returns of cases, with date of attack and death, number of recoveries, &c., at the asylum, work-house, almshouse, penitentiary, and charity hospital, will be found respectively in appendixes A, B, C, D, and E.

Before leaving the topography of this epidemic, it is proper to mention a small number of cases occurring among work-house and almshouse inmates employed upon Ward's Island. The first case was on July 27th, the last August 3d, on which day, I think, all work-house people were sent back. For the list of these cases see Appendix G.

Third—What circumstances existed which might have acted as accessory causes for its initiation or continuance?

The importance of this head, the great difficulty of determining causes, the great danger of adopting the argument *post hoc ergo propter hoc*, demand that all the facts and circumstances discovered, however trivial, which may seem in any way to be influential, should be stated as accurately as possible. On this account some prolixity of detail may be pardoned.

First to be mentioned are some circumstances which would be likely to affect the island at large.

During the first half of July the heat was excessive. Whatever be the nature of the cholera poison, it is generally admitted that such weather is very favorable to its development.

Nearly or quite coincident with this "heated term" occurred two accidents calculated to exercise a general influence: first, the repeated, unavoidable breaking of one of the main pipes across the East river diminished very materially the supply of water to the island, and in some degree interfered with the usual washings,

cleansings and purifications ; second, owing either to the flour used, or the influence of the heat upon the yeast, the bread was of a quality far inferior to that generally issued, being sour and doughy. This bread, as will be seen by reference to the diet table (Appendix H), forms quite a large proportion of the food of the inmates, especially at the alms house.

Contemporaneously, whether consequently or not, with this interference with the diet, diarrhœa prevailed throughout the island. At the Charity hospital I cannot learn that the frequency of intestinal disorders, though considerable, was greater than is usual in the summer season. At the other institutions, however, they were more prevalent ; at the asylum, gradually increasing till the cholera appeared ; at the work house and penitentiary being sufficiently common to cause the appropriate medicines to be kept in several places in the institution for the convenience of the patients. At the male alms house a similar state of affairs obtained. Probably the greatest prevalence was at the female alms house. Here, on the 11th of July—excluding the wards for foundlings (40 and 41), where bowel complaints are universal—one hundred and sixty-two cases of diarrhœa were prescribed for, about one-half of the number being adults, and the remainder children.

It cannot be ascertained, nor, indeed, is there any special reason to suppose, that this prevalent diarrhœa was choleraic in its character. Nevertheless, its mention is of value, as showing that for some reason a tendency to intestinal troubles existed, which with the aid of the specific cause could easily develop an epidemic of great severity.

Local Causes.

The point of origin of the epidemic, and the fact that its greatest severity during the first week was at the "Retreat," and the female wing of the work house, the proximity of which buildings has already been noticed, suggest the idea of some endemic cause. By referring to the elevation given with the map, it will be seen that both of these buildings occupy considerably lower ground than the lodge above the alms house below.

Moreover, within the asylum grounds, about equi-distant from the lodge and the retreat, a pond has formed in the excavation of an old quarry. This pond, though it had collected sufficient soil for the rooting of bulrushes, and in summer, had, about the margin, a small quantity of green surface vegetation, did not appear

to be stagnant, it being supplied by a spring, and the overflow escaping by a waste-way. The water of the pond is slightly impure, but gave rise to no foul odor.

These causes, however, seem inefficient. For, had the source of the epidemic been paludal we should hardly expect to find severe visitation and comparative exemption side by side, as, during the first week, at the work house, though nothing existed to prevent the free circulation of any miasm from wing to wing.

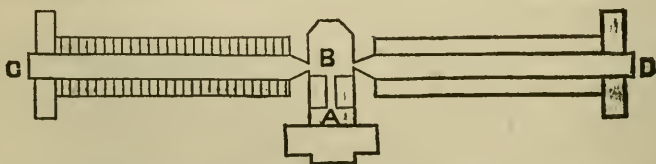
The fact of the almost unprecedented severity of the epidemic at the work house—about one-fifth of the inmates dying of the disease—forces upon us the supposition of some special causes here; and this hypothesis gains probability from the following fact:

Somewhere between the twentieth of June and the fourth of July (the exact date has, unfortunately, been lost), an epidemic of cholera morbus appeared in the female wing of the work house. Twenty to twenty-five cases occurred in the first night and day, and about the same number the second, and a few on the third. The male wing was exempt till the third day, when four or five cases occurred; the whole number of cases being about sixty.

At the time I sought for a cause for this difference between the two wings—in the diet, but (though I found in the list several things calculated to produce intestinal derangement) this was identical on both sides of the house—in the lodgings, but this was precisely the same. If in the physical status there was any difference, the advantage was on the side of the females. The cause, then, was finally set down as some endemic, but unknown, influence.

During the three or four weeks that intervened between this epidemic and that of cholera, diarrhœa continued with an occasional attack of cholera morbus, the type in some of the latter cases being quite severe, and, though unrecognized, may have been the initial cases of cholera.

It will be profitable, then, to inquire what were the hygienic conditions of the work house, and especially how these differed in the two wings.



The diagram above gives the general plan of the work house. The centre building "A" is chiefly occupied as officers' quarters,

kitchen, &c. From the northern and southern sides of the scullery "B" extend long halls, 291 feet in length by 24 feet in width. To these air and heat are furnished through a row of gratings, 4 feet by 4, running down the centre of the hall floor. Beneath these gratings is a trench 5 or 6 feet wide by about 4 feet deep, containing steam pipes for heating. There is no proper cellar under the work house, except the scullery and the extreme ends of the halls. The female (northern) hall "C" extends quite to the roof, its height being 45 feet, and is ventilated by skylights and a row of windows on either side of the clear-story. On the male side the clear-story is occupied by work shops, thus reducing the height to 32 feet—the ventilation being by skylights alone. On either side of these halls are three tiers of cells. On the female side there are 25 cells in a tier (150 in all). Each cell is 16 feet long, 8 feet wide, 11 feet high, having a latticed window about five feet high by two and a half wide, furnished with two glazed sashes. The upper half of the doors of the cells is also latticed, thus admitting air from the large hall. These cells are intended to accommodate four persons each. On the male side the cells on the ground floor are of similar construction to those above described, but on the second floor they are large enough to contain sixteen persons, and upon the third floor twenty-four; the number of windows is proportionate to the size, but there is but one door.

Across the extremities of the halls are placed, in the manner of transepts, wings, 132 feet by 26 feet. These contain no cells, but are occupied for offices, dining-rooms, officers' lodgings, laundry and workshops, which last, in the third and fourth stories, were converted during the prevalence of the cholera, into wards.

This description of the building will suffice. As regards the habits and occupations of the inmates, and the differences between the males and females, the following are most noteworthy as bearing upon the development of cholera.

The males, during the day, were at work out of doors, returning to the house only to take their meals and to sleep. The privies for their use were near their work, or at the river side.

The females, on the contrary, remained constantly within doors, working in the hoop-skirt shop, washing, scrubbing, or, the larger part, sitting, without work, in the "sewing-room." The water closets for their use—two in number—were empty cells at either end of the "sixth tier" in the third story. These cells were fur-

nished with a properly constructed seat, beneath which were placed tubs of the size of half a barrel. After the women were locked in their cells for the night, these tubs were taken to the river side, emptied, filled with water, and left till the next evening, other tubs taking their places during the next day.

Most of the time during the day these closets were thronged with women, part of whom came of necessity, but more to arrange their toilet; and especially as making it an excuse to escape from their work and the surveillance of the overseers, and thus hold a *conversazione* with their fellow inmates. By this over-crowding and the accumulation of excreta, the air became quite foul, so that if any infectious dejections were contained in the tubs, these persons frequenting the cell would be very liable to their influence.

At about six P. M., the inmates, both male and female, were locked up for the night; and to each cell were furnished kids holding water, and one or more buckets, to be used as close stools. When the cells were unlocked, at half-past five in the morning, these buckets were emptied by the inmates themselves, at the river side, and left there till the afternoon—half-past four in the summer, three o'clock in the winter.

The halls and cells were always kept scrupulously clean. The floors were scrubbed each morning and then carefully dried, and about once a week, chloride of lime was used in the scrubbing for the more perfect purification. The walls, also, were whitewashed frequently—as often, indeed, as any parts appeared to be soiled, a fresh coat was immediately applied.

Lunatic Asylum.—By referring to the return, appendix A, it will be seen that the ninety-eight cases of cholera reported, were distributed as follows:

Retreat	32 or 32.65 per cent.
Pavilion "A"	17
Pavilion "B"	7
—	24 or 24.49 do
Lodge, male	6
Lodge, female	8
—	14 or 14.28 do
Main building	28 or 28.57 do

During the height of the epidemic the Retreat and Pavilion "A" had a still greater percentage of the cases, more than sixty per cent. of those reported up to September 1st, while these buildings contained only about thirty per cent. of all the inmates, the pavilions having about seven per cent each.

While the retreat had a population only a little more than that of the lodge, and about one-third of that of the main building, it had more than twice as many cases as the former and a few more than the latter building.

Now, in seeking for causes of this difference, it appears, 1st. That the diet of all the buildings is identical. 2d. That the physical status of the inmates of each building is about the same, except that those in the pavilions are mostly old, incurable cases, and, probably, are in a somewhat worse condition than the others. The inmates of the lodge are maniacs, the first floor being allotted to males, the second and third to females; but their condition appears to be nearly as good as that of the other inmates. 3d. As regards the situation and elevation (see map), the lodge and main building stand higher than the retreat and pavilions. The latter, indeed, are upon reclaimed salt-marsh at the upper end of the island. 4th. The construction of the buildings, the ventilation and privies, were as follows :

The pavilions are frame buildings, containing a single ward, 180 feet long by 24 feet wide. They are raised upon a foundation about 18 inches high. Their ventilation is sufficiently good by means of windows and ventilators in the roof. These wards contained about sixty-five persons each, giving ample air-space for each person. To each ward is attached a small wing containing bathroom, water-closet, &c. The privies in these pavilions are of the same pattern as those in all the buildings of the asylum, viz : A trough, covered by a seat, containing water, which, whenever necessary, is allowed to escape by removing a plug ; the contents passing into a sewer which connects with the river, a few yards distant from the pavilion. The nurse state that during the cholera these were quite frequently emptied.

The conditions of pavilions "A" and "B" were, as far as discovered, identical. The difference in the number of cases in the two is undoubtedly due to the fact that about the first of August pavilion "B" was converted into a cholera hospital, the majority of the inmates being removed to pavilion "A," while the remainder were distributed to the other buildings of the asylum. How far this assisted, if at all, in the distribution of the cholera, is unknown.

The other buildings are all arranged on the plan of separate rooms, except the upper floor of the "retreat." The main building has an octagonal centre building, used as offices, officers' quar-

ters, &c., from the northwestern and southwestern sides of which wings extend—the northwestern occupied by males and the southwestern by females. Each wing has three halls, 245 feet long, composed of a row of small rooms on each side of a central passage. These rooms are well lighted and passably ventilated by windows. The allowance of air space is not far from 700 cubic feet per person.

The lodge has three stories, each having in the centre a narrow hall, and at each side a wider hall, which is connected with enclosed piazzas. The small rooms are therefore tolerably well ventilated, having a small window over the door opening on the lateral hall, with a smaller window on the central hall. The water-closets are at the eastern end of the building, one for each hall.

The Retreat has a centre core consisting of two rows of small rooms, placed back to back, and opening by a door and window upon the lateral halls, at the opposite sides of which halls the windows, through the walls of the building open to the outer air. This is the arrangement of the first and second stories; the third story, however, is one large ward, from side to side of the building, ventilated, of course, by the windows. The water-closets are at the eastern end of the building, one for each hall.

These closets were found to be foul, and lacking a sufficient supply of water when inspected by Dr. Hamilton during the epidemic, August 4th and 5th. He also discovered that the cellar of this building was badly ventilated.

Now, although in the last three described buildings, the plan of separate rooms obtains, yet of the influence of this arrangement upon the spread of cholera, nothing can be predicated, since in all the buildings of the asylum the inmates were allowed access to the halls and open air constantly during the day. Even in the lodge they occupied the halls and enclosed piazzas. They were, therefore, really confined less than half the time. In the Retreat building, where, on different floors, the two plans were tried side by side, little difference is shown :

The first floor, small rooms, had.....	10 cases.
The second floor, do	12 do
The third floor, do	10 do

The population being on the two lower floors about 45 each, the upper floor about 60.

Alms House.—The cases reported at this institution were distributed as follows :

<i>Males</i> —Almshouse, 1st floor.....	7	
do 2d floor.....	3	
do 3d floor.....	5	
do centre building.....	3	
	—	18
Outlying wards.....	7	
Location not stated.....	4	
	—	29
<i>Females</i> —Almshouse, 1st floor.....	21	
do 2d floor.....	19	
do 3d floor.....	6	
do centre building.....	8	
	—	54
Pavilion.....	27	
	—	81
Total.....		110

It will at once be noticed that three-fourths of the whole number of cases were females, which is not proportional to the relative number of inmates. On the day of the appearance of the cholera here, July 30th, there were in the almshouse 587 adult males and 636 females. It is fair to deduct, for the present, in this comparison, the cases occurring in the female pavilion, 27 in all, and the population of the same, 99 persons. We have then 54 cases in 537 females, or about one in ten. Of the males about 480 were lodged in the main building. The number of cases developed among this number was 25, or about one in nineteen.

Now it will be seen that for so marked a difference some tangible cause should be found. Inquiry shows :

1st. The diet (appendix "H"), whatever may have been its effect on the digestive system, was uniform throughout the institution.

2d. That the physical condition of the males and females was not materially different—the majority of both being either aged or disabled.

3d. That the buildings are identical in structure, namely : A center building, four stories high, from either side of which extend wings, three stories high. Each floor of the wing contains four wards, making twenty-four in all, besides which there are, in the center buildings, four or five wards used as dormitories. The wards in the wings run transversely, opening, at either end, upon

piazas. The ventilation is by a door and two windows, 7 feet 5 inches by 3 feet 3 inches, at either end of the ward. The wards at the end of the building have three additional windows each, but this appears to have had no influence on the number of cases.

The size of each ward is 56 feet long by 22 feet wide and 13 feet high, = 16,016 cubic feet. The average number of beds in each is twenty-four, giving an air space of 667 cubic feet per person, when the wards have their proper allowance, which was the case during the summer.

This allowance of air space is, in many of the wards, diminished by the presence of infants distributed to them. In the wards occupied by the nursing women, their number is a little greater than that of the adults; the wards on the second floor have from four to six infants each. The two wards at the end of the eastern wing, Nos. 40 and 41, were set apart for infants alone, with only four or five adults each as nurses.

4th. That the habits of the inmates of the two buildings are quite different.

The males occupy their wards only during the night. During the day such as could work are employed, and the remainder are kept out of doors; or, if the weather was inclement, in a shelter shed erected for that purpose. They are practically in the open air all their waking hours, except meal times.

The females, on the contrary, were for the most part very little out of the house. Some were working as scrubbers and washer-women, and others sat in the chapel room sewing; but the greater part constantly sat in their wards — many going out hardly an hour a day.

By again referring to the table on page 185, it will be noticed that the three floors had, respectively, 21, 19, and 6 cases. The number of inmates on each floor is not far from the same. But there are some differences of habits deserving notice. The occupants of the first floor wards are chiefly very old or helpless persons, who are placed there to save them from the labor of going up and down stairs. Those on the floor above were not materially different, except that they were on the average somewhat younger, or less helpless; among these women were distributed children from four to eighteen months old to be brought up.

The third floor of the east wing (except ward 41), was occupied as hospitals for adults, and in these three wards no cases occurred. The other wing contains the women nursing their own children.

Of these four wards, one had three cases, another one, and the other two had none.

In the centre building, the three wards (one on the first floor and two on the third), occupied by old women, had but one case. The two wards on the fourth floor, Nos. 49 and 50, had, respectively, one and six cases. Both wards are occupied by nursing women. No. 50 is set apart for those who are, or whose infants are, sick or suffering from skin diseases, which it is desirable to isolate. These women are allowed to remain in their wards more than the other nursing women.

The wards in all the buildings were at all times kept quite clean by daily sweeping and scrubbing.

The water-closets here are by the river side, at a short distance from the main buildings. That for males is numbered 10 upon the map, that for females 22. Their vaults connect with the river by sewers, in which the tide rises and falls, that for the male building always containing some water, that for the females being, I think, dry at low tide.

These are the main points as regards the almshouses, but it remains to mention the state of the two pavilions. An account of these will be the more interesting, as one entirely escaped, while the adjoining one suffered very severely. The cause of this difference has not been made apparent by the inquiries and examinations I have made; yet the facts may be of considerable importance by way of negative proof.

The situation of these two pavilions is shown on the map (Nos. 8 and 9). They have the same length, 162 feet (inside measurement), and same width, 24 feet. The mean height of the northern (male) building is about nine feet six inches, that of the southern (female) about 12 feet, making the air space of the former about 36,936 cubic feet, that of the latter about 46,656 cubic feet. The allowance per person was nearly the same, say 460 feet for males, and 470 for females; those numbering about 80; these, at the beginning of the cholera, 99.

Each pavilion has, on either side, a narrow yard extending the length of the building, 162 feet. Those for the males have a width of $21\frac{1}{2}$ feet on north side, and $20\frac{1}{2}$ feet on south side; those for females 12 feet, north, and 30 feet south; making the total width of yards the same for each pavilion—42 feet, and separating the two pavilions $32\frac{1}{2}$ feet. The grounds of the two are separated by a wall about 12 feet high. Upon these yards, as well as at front

and rear, open the windows, 25 in number, of each building. Each of these windows are 5 feet 5 inches by 3 feet 4 inches. In the roof are three ventilators, 2 feet by 3, and 2 dormer windows.

Against the sides of the dividing wall are placed the water-closets of the pavilions, two for each; one of these being simply a urinal and the other a privy arranged with tubs, like those described at the work house. These latter were emptied once a day. No material difference can be found between the two.

The two buildings have similar exposure to the sun. In the southern yard of each is a scaffolding for shade, and here the patients spent a considerable part of the day. It will be noticed that while the closets for the male pavilion are in the same yard with this scaffolding, those for the female are not. So that the female patients were not necessarily so near them during the day. But the privy of the female alms house is nearer (see map) to the female pavilion than to the other, yet the distance is considerable, say 100 yards.

The condition of the inmates was as follows: The females, for the most part, were either suffering from nervous disorders, as paralysis or epilepsy, or were harmless lunatics. With these were a few incurables; only two or three, however, were bed-ridden. The other pavilion was used as a hospital; the diseases being chiefly paralysis, chronic rheumatism and phthisis pulmonalis. In addition, there were very many old men transferred from other wards owing to their helplessness, or extremely filthy habits, which were such as to require constant cleansing of the ward by the orderly and helpers, to prevent its becoming foul. Both pavilions were, however, kept quite clean.

There does not seem to be any important difference in the hygienic conditions of the two pavilions. Considering the habits of the patients, the males would seem the more likely to suffer; but on the contrary, twenty-seven cases occurred among the females, none among the males, with the exception of one, which, though included in the return (No. 87, Appendix C) as cholera, is mentioned by the attending physician as doubtful. The patient was 80 years old, and recovered.

Penitentiary.—Since from this institution but nineteen cases with seven deaths are reported, while during the prevalence of the cholera there were confined in the building 405 males and 133 females, 538 in all (report for week ending August 4th), the

question of accessory causes becomes rather a negative one, *i. e.* Why did this building escape thus lightly?

Running over the same inquiries as pursued at other institutions, it appears that—1st. The diet (Appendix H) is not materially different from that of the other institutions. 2d. The amount of air-space (172 to 197 cubic feet) allowed to each person is less than in any other building upon the island, the cells being seven feet long, three and a half wide, and seven high, except in the new wing, where they are about four feet wide. These cells are ventilated by the gratings of the doors, which open upon a corridor fifteen feet wide, which intervenes between the cells and the outer walls. There is also a vent pipe in the ceiling of each cell. 3d. The habits of the prisoners are much the same as at the work house—the males working out of doors, and the females in the house. 4th. The system of privies is also much the same, the men using those near their work by day, while the women use one at the extreme southern end of the building, the vault having a sewer leading to the river. At night pails were used, as at the work house.

The hospital ward had cess-tubs, which were emptied daily, or oftener if necessary.

Charity Hospital.—The hygienic circumstances were here, in general, very good. The physical condition of the patients was, of course, very poor. The diet being that of a hospital, was considerably better than that of the other institutions; but is not introduced in appendix H, as it varied for different individuals.

The allowance of air-space was generally ample; the ventilation and condition of closets (which have been in other institutions mentioned as being, perhaps, causative) seem to be here very good.

To this statement an exception should be made, which is: That four cases of cholera occurred in one corner of female ward 9; a flue which opened at this corner was found to lead to a cellar which was foul from refuse bandages, &c., collected there, as well as from containing a privy for the workmen about the house. The condition was such that Dr. Hamilton deemed it necessary to remove the patients from the ward till it and the cellar could be properly cleansed. This will be again alluded to farther on. This is the only instance discovered where any filth seemed connected with the epidemic in the hospital.

But the manner of its appearance here deserves a word as giving the only instance where any facts, bearing upon the question of *importation*, have been discovered, although the communication had been constant among all the institutions throughout the epidemic. In particular, persons committed to the work house, are daily sent to the asylum, Charity and Bellevue hospitals, and occasionally to the alms house, as helpers, besides the transfer of patients to hospitals and nursing women to the alms house.

The first cases, then, excepting the three sporadic ones, mentioned above, were Ann Swift and Eliza Cowan. Both were transferred from the work house, where the former had assisted in the cholera wards, and the latter had actually been attacked.

The night after Ann Swift's arrival, July 31, she was seized with cholera, which did not, however, prove fatal.

Cowan was transferred on the 3d of August as convalescent, but the symptoms had not entirely disappeared, and she died on the fifth.

In the interval other cases were developed; the next case being in the ward adjoining that in which Swift had been sick.

Very soon after the disease appeared in distant and various parts of the house.

Personal Causes.—These, again, may be divided into those exercising quite a general influence, and those more limited or quite individual in their action.

Generally, then, the inmates of the island were, to a great degree, debilitated or cachectic, either from disease and confinement, as at the asylum or hospital; from debauched life or habitual drunkenness, as at the work house; from these causes, or from age and privation, as at the alms house.

We ought to notice the effect of these same causes upon the susceptibility of individuals.

Of the influence of particular *debilitating diseases* I have been unable to obtain sufficient data to enable me to speak with any degree of accuracy or positiveness. Of the cases at Charity hospital, the disease at admission is recorded in the thirty-five only, viz:

Various venereal diseases	10
Cholera epidemica	3
Other intestinal disorders	5
Thoracic affections	3
Rheumatism	3

Ulcer.....	3
Miscellaneous diseases (one case each).....	8
	<hr/>
	35

In addition, although I have no statistics upon the point, I have the assurance of several members of the staff that they observed those affected with pulmonary tuberculosis, and Bright's disease (diseases in which a deranged state of the intestinal canal is common), to be especially susceptible to the cholera poison.

It is generally thought that a *dissolute* or *debauched* life markedly heightens this susceptibility. The prevalence of such habits among the inmates of the island is so nearly universal, that the epidemic under discussion proves nothing upon this point, unless we accept as an argument the fact that it was severest at the work-house, where this class of persons is most common — vagrancy, prostitution, and drunkenness being the chief grounds of commitment.

But of the effect of a *recent debauch* I can speak more decidedly. Quite a number of cases were noted, both by others and by myself, where choleraic symptoms rapidly supervened upon a debauch, or the free use of alcohol under the impression that it exercised a prophylactic influence. Several of these were less than ordinarily exposed to recognized sources of infection.

At the work-house, of those constantly employed about the sick as nurses and "doctor's runners"—especially if we except those who became nurses after convalescence from an attack—I think a larger proportion escaped than of those not so exposed. But with the majority of those nurses who were seized, a debauch had immediately preceded the attack. One nurse—who was very faithful in the performance of her duties—experienced choleraic symptoms on three distinct occasions, after having each time too freely taken whiskey to support her strength.

A similar instance was noticed at the almshouse. Two nurses—who had escaped while attending the sick—became intoxicated; the one some ten days after the cessation of the epidemic, the other a week later; and in both cases a fatal attack of cholera immediately followed.

There seems to be little or no proof of *contagion*, in the ordinary sense of the word. We have just spoken of the comparative exemption of nurses at the work-house, and of the circumstances

in the cases of those at the almshouse. At the asylum, but one helper died; and it is stated in the report from that institution, that the attack in this case was provoked by great carelessness on the part of the patient. The other facts bearing on this point seem all to be capable of other interpretation.

The following table will show the relation of *length of residence* to susceptibility :

	Lunatic Asylum	Work House.	Almshouse.	Penitentiary.	Charity Hospital	Total.
Residence less than 10 days.....	---	76	1	2	11	90
do from 10 to 30 days.....	---	54	4	4	11	73
do from 1 to 3 months....	4	39	20	8	16	87
do from 3 to 6 months*....	---	32	---	---	---	32
do from 3 months to 1 year,	24	---	14	5	11	54
do from 1 year to 5 years..	36	---	33	---	---	69
do above 5 years	34	---	9	---	---	43
do not stated	---	3	30	---	1	34
Total	98	204	111	19	50	482

To make this table really valuable, it is necessary to know precisely how many of each class (as above divided) were in each institution during the prevalence of the cholera, averaging from daily estimates. This I have not obtained.

The only place where the effect of *recent arrival* can be calculated is at the work-house, as here the greatest number of transient inmates is found. It will be noticed that of the two hundred and four cases (Appendix "B"), seventy-six (rather more than one-third) had been, when seized, less than ten days resident. Now, it appears from the books that commitments for ten days constitute about one-half of the total number, and this might seem to account for the large proportion seized thus early; but, in reality, the number of ten-day commitments does not fairly represent the relative number of these persons resident in the house, since those committed for the shortest periods (and whose escape is therefore of least consequence), are generally selected to be sent as workers to other institutions. Indeed, I find that though seventy-six were

* At Work House six months is generally the limit to confinement.

attacked within ten days, and fifty-four between ten and thirty days, after arrival (one hundred and thirty in all), yet of all the cases (two hundred and four), sixteen males and twenty females (thirty-six total) were committed for ten days, and seven males and one female (eight total) for one month (forty-four in all); little more than a third of the one hundred and thirty cases. This would seem to accord with the received opinion, that newly arrived persons are especially susceptible, while others experience a kind of acclimatization. An additional argument is the following: by inspecting the table (Appendix "B") I find that the proportion of newly arrived persons seized, increased as the epidemic proceeded. Thus:

	Resident 10 days or less.	Resident bet. 10 & 30 days.
Of the first thirty cases there were.....	9	5
Of the second thirty cases there were.....	9	7
Of the third thirty cases there were.....	7	11
Of the fourth thirty cases there were.....	13	5
Of the fifth thirty cases there were.....	6	9
Of the sixth thirty cases there were.....	18	8
Remaining twenty-four cases.....	14	9
Total.....	76	54

Appendix "K" gives the classification of cases by sex and ages in decennial periods. The column of totals shows the following:

	MALES.			FEMALES.			TOTAL.		
	Cases.	Deaths.	Per cent.	Cases.	Deaths.	Per cent.	Cases.	Deaths.	Per cent.
Under 20 years.....	9	5	55.5	20	11	55.0	29	16	55.1
Between 20 and 30 years...	36	22	61.4	100	73	73.0	136	95	69.8
do 30 and 40 years...	29	24	82.7	75	56	74.66	104	80	76.9
do 40 and 50 years...	29	21	72.4	56	42	75.0	85	63	74.1
do 50 and 60 years...	26	18	69.2	40	36	90.0	66	54	81.8
do 60 and 70 years...	20	18	90.0	20	18	90.0	40	36	90.0
do 70 and 80 years...	3	3	100.0	10	10	100.0	13	13	100.0
80 and upwards	1	.....	.....	2	2	100.0	3	2	66.6
Unknown	4	.....	.....	2	1	50.0	6	1	16.6
Total.....	157	111	70.70	325	249	76.61	482	360	74.68

That is, the death-rate increases with the age of the patient as in many other diseases, and was somewhat higher with females than males.

Now, the value of this table, as showing the effect of age upon susceptibility, is destroyed by the absence of data as to the proportion of the whole number of inmates in each of these classes. I have been able to obtain no such statistics, except the following, which is a classification of the patients admitted into the asylum during the past year:

	Males.	Females.
Under 20 years -----	7	13
Between 20 and 30 years -----	54	106
do 30 and 40 do -----	70	107
do 40 and 50 do -----	66	54
do 50 and 60 do -----	25	29
do 60 and 80 do -----	9	17
	<hr/>	<hr/>
	231	326
	<hr/>	<hr/>

I am informed that the proportion of each of these classes to the total would be about the same, if the whole number in the institution were estimated.

Perhaps the annual reports from the various institutions, now about being presented to the commission, may give the lacking data.

The large proportion of females (about two-thirds) among the cases suggests the idea that sex may considerably influence susceptibility. But the difference, when any exists, after considering the greater number of females than males in most of the institutions, as well, probably, as the higher death-rate just alluded to, may, in many instances, be explained on the ground of special exposure. For example: Of the 98 cases at the asylum, 25 were males and 73 females. Of these 73, 56 occurred in the retreat and pavilion, where females alone were lodged, leaving but 17 women attacked in the main building and lodge, from which buildings the 25 male cases came. Under the same circumstances, then, the percentage is in favor of the females.

At the work house the number of cases was 72 males and 132 females, the proportion being very nearly the same as that of the average number of inmates of both sexes. At the outbreak of the cholera there were in the building 214 males and 435 females; but later, by discharges, the preponderance of females was diminished.

At the alms house there were 26 males and 85 females. If we subtract the 27 cases occurring in the pavilion, still we have 58 cases among the females—more than twice as many among the

males. The difference between the hygienic conditions of the two, as has already been described at length, will, I think, go far to account for the disparity of numbers.

At the penitentiary there were attacked about 4 per cent of the males and about $2\frac{1}{4}$ per cent of the females, showing here an advantage on the side of the latter.

At the Charity hospital the numbers are 18 males and 32 females. Probably the percentage is a little heavier among the females, though the precise number of either sex in the building I have not ascertained; the females, however, were considerably more numerous, there being then 11 wards occupied by males and 16 by females.

We may include under the head of personal causes the question, as to how far the *washing of infected clothing*, which has been quite strongly urged as a cause, did really act as such. Now the facts are as follows :

At the asylum were employed about 20 washer-women; of these one had cholera. This is only 5 per cent, or a considerably smaller percentage than among those not so employed.

At the work house 12 washer-women died, their places being supplied by others; the total number being 34. This proportion (35 per cent) is somewhat heavier than among those who did not wash.

At the alms house the precise number of washer-women attacked is not stated; but the washing is chiefly done by the nursing women from the wards 45, 46, 47 and 48, which have been already mentioned as having but four cases in all, which is certainly below the average.

At the penitentiary I neglected to inquire upon the point.

At Charity hospital no washer-woman was seized.

The amount of danger from infected articles would, in all probability, be very slight where disinfectants were freely used; but for the first few days of the epidemic this matter was, in the main, overlooked, and full play was then allowed for the action of any infectious material.

The particular manner of disinfecting and cleansing soiled articles at each institution will be mentioned under the next general head.

Fourth.—What means were employed for its arrest, and with what success ?

These may be, for convenience, divided into those of a *general*

hygienic nature, and those with *special reference to infectious matter*, although the distinction cannot be closely drawn.

Under the first head come *changes in diet, prophylactic medicines, improved ventilation*.

The regular diet of the several institutions is given in Appendix "H." The following changes were made :

At the lunatic asylum a certain quantity of mutton was substituted for the salt beef used as soup stock, which latter was found to cause infestinal disorders. In addition, rice was ordered in place of mush and molasses. The date of these changes is not stated.

At the work house, August 4th, Dr. Hamilton directed the following changes : That at breakfast *coffee* should be substituted for *rye coffee*; that the dinner should be of meat, bread and *potatoes* (soup being, I think, discontinued), and that at supper rice and tea should take the place of mush and molasses. Dr. Hamilton's notes state that on the next day (5th) this had all been completed, with the exception of the tea, which had not yet been obtained.

At the alms house nearly the same substitutions were directed and complied with.

At the penitentiary the only dietary change I know of was the interdiction of the mush and molasses ; but the value of this is shown by the fact, which Dr. O'Dwyer reports, that after the resumption of the mush diet for supper, a few weeks later, the amount of diarrhœa very considerably increased.

A large proportion of cases being developed during the night, the following mixture was issued Saturday, August 4th, at the work house, as a "night-cap" to each person :

R Whiskey, f oz. i ;
Tr. Capsici, M xv ;
Aquæ, f oz. iii ;
M.

For those who had diarrhœa, to this mixture was added Tr. Opii, M xv.

At the alms house the same prescription was used, with the substitution of an equivalent quantity of pulv. zingiberis; and at the penitentiary with the substitution of black pepper.

In addition, in some instances, where it was thought that chilliness may have contributed to the development of choleraic symptoms, extra blankets were issued.

In regard to ventilation, the following appears from Dr. Hamilton's notes :

August 4, the cellar of the retreat was ordered to be ventilated as it was foul.

At the work house, on the same day, it was ordered that stoves be put up in the cholera wards, and fires be kept in them to assist in creating a current of air ; the windows to be kept open at the same time. This being Saturday, probably the order could not be executed before Monday, the 6th. Indeed, from Dr. H's notes, it appears that the requisition for the stoves was not made till this latter date.

At the alms house the same instruction as to kindling fires in female wards was given.

At the penitentiary I find no special changes in the ventilation except the removing of obstructions, such as rags, from the vent-holes and doors, which the prisoners had put in with a view to hindering the visits of rats.

At Charity hospital no special need appeared for change in the ventilation of the building, which, as has been previously stated, is very excellent.

In regard to female ward 9, mentioned above, it appears from a report bearing the date of August 29th, made by Dr. Macomb to Dr. Hamilton, that there had occurred in this ward four cases of cholera, three fatal ; five cases of cholera morbus, and nearly a dozen cases of acute diarrhœa, all recovering. From the cellar before alluded to, "four wheel-barrow loads of filth" were removed. The patients were removed from the ward August 27th, and this is the close of the epidemic at Charity hospital.

Under the second class come : Isolation of cholera patients ; the removal of inmates from infected localities ; the removal and disinfection of dejections, or articles soiled by them ; the arrest and immediate treatment of diarrhœa cases.

At the asylum isolation was established from the first. The earlier cases were removed to the gymnasium (No. 21 on map), not far from the main building. Later, about the 1st of August, pavilion "B" was converted into a cholera hospital, and all cases were sent there till the latter part of September.

At the work house the cases were not taken from the building at any time, but to large wards in the transepts. At first to ward "H," situated on the third floor of the north-eastern transept, which is always the sick-bay, but the second day another ward (room

"G" on the same floor, but across the hall) was opened; and August 1st, another ward for the females (over ward "H") and others for males, in the south-western transept.

At the alms house on July 31st, the day after the appearance of the cholera there, a tent (marked 20 on the map) was erected near the female alms house. To this the patients, four or five in number, remaining in the pavilion, were immediately removed; and to it and to another adjoining it, erected a few days later, were taken all female cases as they occurred.

For the males, except that a few were taken to a vacant room in the male alms house, no provision was made till August 4th, when the waiting-room near the dock (No. 6 on the map) was opened as a ward.

The earlier cases from the penitentiary were taken to tents near the small-pox hospital (No. 18 on map); but a convalescent, with his nurses, having eloped, the later cases were treated in the penitentiary building.

At Charity hospital, after the epidemic became well declared, most of the cases were removed before death to the tents near the small-pox hospital; but later (August 13th), owing to the great mortality among the patients thus removed, the amphitheatre was used as a female ward, and ward No. 1 for the males.

This isolation of cases was carried into effect only after the cases had become well marked, and often not till death was close at hand, so that really quite a portion of the career of the disease was passed among other inmates, and the good effect of the isolation was therefore lost.

Removal of patients from infected localities.—At the asylum I can find that nothing of this kind was done beyond the freedom of the yard always allowed to the inmates.

At the work house on the 3d of August the following changes were made as regards the female inmates. They were allowed to be out of doors from 4 A. M., till 8 P. M., and at night their cell doors were not locked, and the outer doors remained open, so that they could at will leave their cells and the building, to use the cess tubs placed outside.

Such was the construction of the work house, and so great the number of inmates, that no part could be really entirely vacated, and this plan was the nearest practicable alternative. This, combined with the removal of the privies, presently to be spoken of,

appears to have been the most effectual of all the means used to break the power of the epidemic.

During the three or four days succeeding the 30th of July, about one hundred women, together with some men, were discharged, with a view of thus limiting the epidemic.

At the alms house the plan of keeping the inmates out of doors was also adopted; but here more difficulty was experienced in inducing the women to take this precaution, the exercise of the authority of the officers becoming necessary to compel its observance. During the epidemic many took their discharge.

Absolute permanent evacuation of any ward was impossible here also, owing to the great number of inmates.

At the penitentiary the prisoners were allowed to remain in the open air on Sundays, instead of being locked up, as had previously been the custom. On other days, however, I believe the usual routine continued.

At Charity hospital, patients whose condition rendered it proper were encouraged to leave the hospital, for the double reason of securing themselves and giving additional room to those who must remain. During the first week or ten days of August, not far from two hundred persons thus took their discharges. Those who remained were kept as much as possible in the open air when the weather was suitable. Here, too, as previously twice mentioned, ward 9 (female) was quite emptied, and the patients scattered among other wards.

Next follows the removal and disinfection of dejections and articles soiled by them, including under this head the disuse of privies situated within the buildings.

As this last obtained only at the work house, we may speak of it first. On the third of August, Dr. Hamilton, directed that the female inmates should, as did the males already, make use of privies by the river side during the day, and that at night the pails should not be placed in the cells; but that the women should go out to cess-tubs, thus avoiding the constant exhalation of their own dejections.

At the asylum "at the onset of the epidemic, a plentiful supply of water had been secured, and a thorough cleansing of closets and sewers was at once instituted and kept up. Also the water-closets and sewers were disinfected by abundant quantities of sulphate of iron, coal-tar, and chloride of lime. Disinfectants were freely used in all vessels, and in all places, where the dejections of patients sick of diarrhœa were placed or thrown."

At the work house the only disinfectants at first, at hand, was the chloride of lime. This was used freely, being put into the night pails and cess-tubs in considerable quantity before they were used; it was also applied to the soiled articles. A disinfectant ("Couterets"), the active ingredient of which appeared to be carbolic acid, was also used to some extent.

On Saturday, the 4th of August, Dr. Hamilton ordered in addition, the following disinfectants for the use of the several institutions: Quick lime for privies and cellars, sulphate of iron for use upon all excreta, dead oil of coal tar for more perfect disinfection of privies, Labarraque's solution, carbolic acid.

At the work house, the first two of these were chiefly used. They were very freely used in privies and pails, and upon bedding, garments and floors.

These two disinfectants, with chloride of lime were, indeed, almost the only ones used at the alms house, penitentiary and Charity hospital. The matter of disinfection was, as I learn from Dr. Ware, quite carefully attended to at the alms house.

Early in the epidemic, as nearly as can be ascertained, on the second of August, Mr. Owens, the warden, ordered the beds to be removed from the pavilion, where the epidemic was most severe; the building to be cleansed, whitewashed and ventilated. For want of other accommodations, however, it was necessary to occupy it again at night.

At the penitentiary disinfection appears to have been discontinued speedily (probably the number of the cases not being sufficiently great to cause much alarm), since Dr. Hamilton (August 19th) directed the resumption of the disinfection and of the whiskey ration, which had been discontinued.

At Charity hospital, disinfection of water-closets and dejections was quite closely overseen, in addition to the directions of each of the resident staff, by Dr. O'Dwyer, the senior member, who had this special duty assigned to him.

A very important part of disinfection remains to be spoken of, namely, the *washing of infected articles*. The order issued by Dr. Hamilton was, that clothing should be boiled at the earliest practicable moment; and if this was delayed, they should, in the meantime be thoroughly impregnated with some disinfecting fluid. The execution of these orders was necessarily intrusted to persons unacquainted with the real object of the process, namely,

the destruction of the poison, and who were generally content if the articles *looked* clean. It is, therefore, somewhat difficult to ascertain how thorough was the disinfection by washing.

At the asylum, two tubs were set apart exclusively for washing, and one for scalding (boiling) the cholera clothing. They were first soaked in cold water, then scalded with boiling water, and afterwards washed. Clothes soiled late in the day remained till next morning; and those soiled on Saturday night till Monday morning. I am, however, informed that a sufficient quantity of sulphate of iron was put upon them to keep in check the development of the poison.

At the work house, for several days, the clothing was washed as usual, namely, by soaking over night in cold water, and then washing in hot water. Later, however, when the overseer of the wash-room came to understand the necessity of so doing, they were immediately boiled.

At the almshouse the same mistake obtained at first, but afterward the clothing was taken to a shed in the rear of the dwelling marked 13 on the map, where the boiling was attended to by two imbeciles.

At the penitentiary I neglected to inquire upon this point.

The overseer of the wash-house at Charity hospital states that she washed the cholera garments and bedding in the same manner as other things, by soaking and then washing—her only precaution being that of using separate tubs for these articles. It should be remarked, however, that at both the hospital and the asylum the washing is mainly done by an engine, so that the washerwomen would be less exposed to any infection than if, as at the work-house and almshouse, most of the cleansing were done by hand.

The arrest and immediate treatment of diarrhœal cases.—On the island, as probably everywhere that cholera ever prevailed, great difficulty was experienced in bringing patients under treatment until the disease was so far advanced as to render it futile. Testimony is also borne as to the ease with which the disease is checked when it can be treated during the stage of diarrhœa.

At the asylum, while seventy-three and a half per cent of the cholera cases proved fatal, only three out of one hundred and fourteen cases of diarrhœa died. Cases of diarrhœa not yielding to a single dose of medicine were isolated.

At the work-house the difficulty was overcome in this wise :

When the inmates were turned out of doors and forbidden the use of privies in the house, they, of necessity, went to those by the river. A guard stationed here noted all who came, and the number of times; and if any one came often enough to excite suspicion of diarrhœa, she was immediately reported and obliged to enter the diarrhœa ward (which was opened August 4), and there be placed under treatment. It is stated that, of the large number admitted to this ward, not one died. Previous to this arrangement, attempts had been made to arrest the disease by furnishing diarrhœa medicines, placed in several parts of the house, to all who should need them; but they either would not apply at all, or, having been somewhat relieved by one dose, would deem it unnecessary to return for another; or else, not being relieved at once, would give it up altogether as useless. The same was the case at the almshouse, where the plan of arrest was not, to my knowledge, enforced.

At the penitentiary, Dr. O'Dwyer informs me that a "runner" made rounds all night with diarrhœa medicines, giving, to those needing them, a dose every hour.

At the hospital, of course, the patients could be kept nearly all the time under surveillance, but not entirely. On comparing the number of cases of cholera in each ward with the known ability or vigilance of the nurses in charge, a sufficient correspondence was found to make it worthy of note; though it would be very unfair to ignore the differences which exists as to the class of patients in different wards, as well as the different circumstances under which these wards were placed.

Now, these were the means employed, and *with what success?*

Appendix "I" gives the daily meteorological observations during the prevalence of the cholera (obtained by the kindness of Dr. Elisha Harris, registrar of vital statistics, to whom I would here acknowledge my indebtedness for this and many similar favors), together with the number of cases and deaths on each day in each institution, and their total. This is also shown in the diagram.

Now, it would seem fair to judge of the value of sanitary measures by the diminution of the number of cases in the institution where they were applied. If, then, we attempt to apply this rule by means of Appendix "I," and the dates above given of the adoption of certain measures, the inquiry becomes quite embarrassing. For we see at the asylum, at the almshouse, as well as at

the Charity hospital, the wave rising to a limited height, then falling, and again rising, and so continuing a gentle undulation for some time; and yet, no corresponding vigilance or negligence, from time to time, in the enforcing of sanitary measures has been detected.

Again at the work house, where the wave rises suddenly to a great height, and falls as suddenly, what is seen?

That the epidemic, beginning with sixteen cases on the 27th of July, reached its climax of thirty-three cases on the 2d day of August. The next day it declined to thirty cases. Now, it may be urged that the epidemic was retiring when measures were taken to put it to flight; since the first date of sanitary change is August 3d.

Now, this objection is not really valid, for this reason. On the 1st and 2d of August some measures had already been adopted, chiefly in regard to greater vigilance on the part of physicians and attendants in discovering patients in the early stages of the disease, and the use of the disinfectants then at hand. For up to August I had been alone. Dr. Sykes took charge on the 1st, and Dr. Castle and myself remained as his assistants until the 3d, and six "Runners" took the place of two, previously employed. Nor was the epidemic really decreasing; for on the 2d of August there were in the work house five hundred and seventy-nine inmates; from these thirty-three cases were developed on that day, or 5.52 per cent. On the next day, the 3d, the census showed five hundred and thirty-three inmates, with thirty cases, or 5.62 per cent. This day the women were turned out of doors, and the day following, out of five hundred and nineteen inmates, twenty-one cases, or 4.04 per cent were developed, and on the 5th, the same measures continuing in force, and in addition, the changes in diet and disinfection having been instituted, the number fell to twelve, or 2.31 per cent; the next day to four, or 0.7 per cent, and the epidemic was virtually at an end.

Fifth.—Therapeusis.

As regards therapeusis very little can be said. Its unsatisfactoriness is shown by the high rate of mortality. The remedies chiefly used were, during the premonitory diarrhœa and earlier stages:

Opiates, either alone, as the tincture of opium, or sulphate of morphia, given dry upon the tongue, or in combination, *e. g.*

Pil. Plumbi et Opii, or the following formulæ:

R. Plumbi acetatis, gr. xii,
 Opii pulv., gr. iii,
M. in Ch. No. vi. div.

Or,

R. Tr. Opii,
 Tr. Camphoræ, āā f ʒ i,
 Tr. Rhei, f ʒ ii,
M.

Or,

R. Tr. Opii,
 Tr. Camphoræ,
 Tr. Capsici,
 Spts. menth. pip.
 Chloroformi, āā partes æquales.
M.

Or, the "Ruschenberger Mixture," or the "Squibb's Mixture."

In the active stage these were nearly all uniformly rejected; dry morphine being somewhat better retained than the others. The hypodermic method of administering morphine seemed to be more generally satisfactory than any other, as the mode of obtaining sleep, and especially as a local palliative in arresting the muscular cramps, even though the intestinal symptoms were unchecked. At the work house many of those who recovered attributed their escape to this relief; and the fact that many died apparently from sheer exhaustion would seem to give probability to their opinion. At the penitentiary, it constituted the principal treatment in the small number of cases which occurred there.

Anti-emetics, such as lime-water, creosote (or a mixture of the two), chloroform, etc., were used quite freely.

External applications.—Sinapisms, hot bottles, friction, were used; but with no material advantage.

Water in most cases was given quite sparingly owing to its immediate rejection. Ice, however, was given freely, with a moderate amount of stimulants, such as whiskey and egg-nogg.

As far as possible patients were kept quite at rest and in a recumbent posture, though the restlessness of many of them interfered with this to a considerable extent.

In the stage of collapse medication was generally slight. More reliance was placed in stimulants and alimentation when this could be retained. It is worthy of remark, that often when the anti-emetics above mentioned were rejected, bland forms of food, *e. g.*, milk, alone or boiled with corn-starch, beef-tea, or even oat-meal gruel, would be retained and speedily be followed by a cessation

of symptoms. Some other plans of treatment were tried in a few cases at the hospital, especially by Dr. Inches, but I cannot obtain the notes of the cases, the doctor being now in Europe. A few cases were treated, according to the advice of Dr. Rahim, of Calcutta, by the subcutaneous use of a mixture of the bromide of potassium, Tr. quassia and vegetable charcoal. *The result was nil.* The cases all dying, as did those under other forms of treatment.

Some attempts were made at transfusion of an artificial serum, with the introduction of oxygen into the peritoneal cavity, but with only a temporary beneficial effect.

In the convalescent stage, the treatment was directed to the extreme weakness which generally obtained.

Though, for the most part, in the foregoing pages, I have avoided stating conclusions or urging arguments—preferring to leave these to others, while I confined myself to stating facts—still a brief summary of the points of the report may not be improper, but of value.

They are these :

1st. The clinical history and post-mortem appearances of the cases establish the epidemic as clearly “Asiatic cholera.”

2d. That it pursued quite a uniform course from the north-eastern to the southwestern extremity of the island, and the time occupied in its passage was sufficiently long to render the explanation of its spread by atmospheric dissemination unnecessary.

3d. That no *proof* of its importation to the island has been found; the first cases in all the institutions having been for at least several weeks resident, though at the work house quite a number of the persons seized on the first day of the *epidemic* had been in the house and on the island less than ten days; that the only probable case of importation from one institution to another is at Charity hospital; that no evidence can be obtained which can render the supposition of the importation of cholera into Ward’s Island from the workhouse anything more than probable.

4th. That cholera established itself upon the Island, and prevailed with greater or less severity in different institutions, apparently unaffected by ordinary hygienic conditions, such as diet, for this is nearly identical at the work house and penitentiary, the two extremes of prevalence; as cleanliness, for all were scrupulously clean; as allowance of air space, as shown in the penitentiary and work house.

5th. That of the effect of habitual drunkenness, of age, and of debilitating diseases, nothing can be predicated from the facts at our command.

6th. That a recent debauch, or a recent arrival at the seat of the epidemic, increases susceptibility to the cholera poison.

7th. That we have no proof of personal contagion, or of any influence of sex upon susceptibility.

8th. That, in a word, the key of an epidemic in any building (or *mutatis mutandis*, its exemption), is the introduction of an initial case; and the severity of such an epidemic will depend mainly upon the amount of infected excreta retained in that building, and the amount of exposure of the inmates, by confinement, to the exhalations therefrom.

9th. That we have proof of the value of sanitary measures, especially disinfection, in its various forms.

10th. That the sanitary measures which seem most crowned with success, are the removal, as far as possible, from buildings found to be infected, of their inmates, and substances believed to be infectious, such as excreta; and, pre-eminently, the arrest and treatment of all cases of diarrhoea.

11th. That as regards therapeutics, nothing new has been discovered.

In closing this report, I refrain from offering any apologies for its shortcomings, since I know that you appreciate, from your own experience, the difficulties of such an undertaking.

It remains, however, to acknowledge the many favors I have received while preparing it. I am indebted, not only to the gentlemen whose names appear upon the first page, but also to the other members of the Charity hospital staff, for facts furnished by them.

Above all, I desire to express the obligations I am under to Dr. Frederick A. Castle, of the staff. His assistance has been most invaluable, and it is but justice to him to say, that a large part of the credit of this report is due to him.

Mr. Sumner, recording clerk at the lunatic asylum, also Messrs. Brown, Parker and Sites, clerical assistants at the work house, alms house and Charity hospital, have rendered me valuable aid in gathering facts concerning the respective institutions.

All of which is respectfully submitted.

LEROY MILTON YALE, M. D.,

81 East Thirty-ninth street, New York.

January 5, 1866.

APPENDIX "A."
Return of cases at Lunatic Asylum.

Number.	NAME.	Age.	Location.	Time.	
				Years.	Months.
1	Maria Tracy	53	Retreat 1 and Pavilion B.	3	5
2	John Clark	59	Main B. H.	16	---
3	Frederick Dunbar	44	Main B. H.	14	6
4	Elizabeth Dean	41	Retreat	4	3
5	Ann McGinty	38	Retreat	---	9
6	Julia Miller	30	Pavilion B.	---	7
7	Mary Katin	37	Retreat	14	---
8	Barbara Messner	28	Retreat	4	10
9	Jane Dowd	39	Pavilion A.	9	---
10	Jane McNeive	50	Retreat	1	10
11	Mary Donahue	55	Retreat	5	5
12	Margaret Glennon	31	Retreat	5	9
13	Agnes Matthews	40	Retreat	4	10
14	Elizabeth Chatillon	46	Retreat	8	3
15	Margaret Devine	29	Main B. H.	4	6
16	Catharine Eidenberg	40	Retreat	1	9

APPENDIX A—Continued.

Number.	NAME.	Age.	Location.	Time.	
				Years.	Months.
17---	Catharine Freund	34	Pavilion A	5	6
18---	Ellen Ward	27	Pavilion A	---	9
19---	Christina Waters	20	Pavilion B	---	7
20---	Ellen Campbell	51	Retreat 3	5	5
21---	Celia Dunleavy	25	Retreat 3	2	9
22---	Elizabeth Loughman	32	Pavilion A	---	9
23---	Mury Russell	31	Pavilion A	---	9
24---	Patrick McGuire	45	Retreat	---	6
25---	Maria Barry	27	Retreat 1	1	1
26---	Emma Leiber	34	Pavilion A	---	7
27---	Ellen Callahan	39	Lodge	8	9
28---	James Wilson	58	Main B. H. 1	1	1
29---	Emily Banham	60	Main B. H. 2	17	10
30---	Charlotte Da Cunha	57	Lodge	---	2
31---	Grace Douglass	29	Retreat 1	3	6
32---	Maria Handley	29	Pavilion A	10	5
33---	Pamela McGee	65	Retreat 1	9	5
34---	Nancy McCormick	46	Retreat 2	15	2
35---	Maria Reed	53	Pavilion A	---	9
36---	Margaret Collins	38	Pavilion B	8	---

37	Hannah Clancy	Main B. H. 1	3	1
38	Mary Little	Lodge	1	3
39	Margaret Quinn	Retreat 1	2	9
40	Margaret Ryan	Pavilion A	6	4
41	Bridget Skelly	Retreat 1	1	6
42	Rose Baumgartner	Pavilion A	1	9
43	Angeline King	Pavilion B	1	3
44	Ellen Lacy	Pavilion B	9	5
45	Ellen Smith	Pavilion A	14	9
46	Ellen Fairly	Pavilion A	4	3
47	Margaret McTiernan	Pavilion A	*	9
48	Caroline Tegeler	Retreat 2	9	5
49	Honora Hunt	Retreat 2	9	9
50	James Collins	Lodge	9	10
51	Samuel Eisgran	Main B. H. 3	9	3
52	Rose Gilligan	Lodge	9	2
53	Ann Reynolds	Pavilion A	9	9
54	James Mulligan	Main B. H. 1	1	10
55	Ellen Longfield	Pavilion A	9	3
56	Andrew Kardner	Main B. H. 1	1	2
57	Bridget Buckley	Retreat 2	9	9
58	Jane Cunningham	Lodge	9	9
59	Mary Cullen	Pavilion A	3	10
60	Elizabeth Hawkins	Main B. H. 1	3	4
61	Henry Dunn	Main B. H. 1	1	4
62	James Delaney	Main B. H. 1	1	4

* 17 Days.

APPENDIX A—Continued.

Number.	NAME.	Age.	Location.	Time.	
				Years.	Months.
63	John Donovan	24	Lodge	1	7
64	Sigismund Elbert	29	Main B. H. 3	1	1
65	Francis Welch	35	Main B. H. 1	2	1
66	Mary Jackson	40	Retreat 1		5
67	Ann Moore	30	Retreat 2		11
68	Mary Ann Weaver	32	Retreat 2	2	
69	Ann Brown	45	Retreat 2	5	
70	Thomas Sullivan	22	Lodge		6
71	Bridget Wilson	40	Main B.		6
72	Ann Agnus Cotter	48	Lodge	1	4
73	Elizabeth Finn	58	Main B. H. 2	2	7
74	Michael Murphy	58	Lodge	8	10
75	William Barnes	37	Main B. H. 3	13	10
76	Philip Donohue	66	Lodge		5
77	Joseph McGrath	18	Main B.		6
78	Bridget McCue	43	Retreat 3	6	
79	Mary Helen Grim	53	Main B. H. 3		3
80	John Braden	57	Main B. H. 3	25	
81	Walter A. J. Robbins	38	Main B. H. 3	3	
82	Honora Desmond	28	Retreat 3	2	10

83	Eliza Campbell	46	Pavilion A	9	3
84	Bridget Murray	40	Retreat	2	4
85	Mary or Budget Farrell	50	Lodge	5	2
86	Ann M. Stadler	42	Lodge	5	7
87	Henry Schauff	47	Main B. H. 1	1	---
88	James Bye	54	Lodge	---	4
89	Peter Tyrrell	39	Main B. H. 1	4	---
90	John Orchard	47	Main B. H. 2	5	4
91	Eliza McWhood	34	Main B. H. 3	4	10
92	George Hertsell	---	Main B. H. 1	16	4
93	Susan Garland	34	Main B. H. 3	3	4
94	Mary Ann Weaver	32	Retreat	2	---
95	Bridget Welsh	56	Pavilion B	---	8
96	Ann Slavin	---	Retreat	5	3
97	James Moran	31	Main B. H. 1	1	---
98	Mary Mulshine	37	Retreat	2	4

APPENDIX A—Continued.

Number.	NAME.	Attacked.	Died.	Recovered (R.)	Duration of attack.	
					Days.	Hours.
1	Maria Tracy	July 23	July 23			3
2	John Clark	do 25		R.	2	
3	Frederic Dunbar	do 26		R.	1	12
4	Elizabeth Dean	do 26	July 28		2	
5	Ann McGinty	do 26		R.	2	
6	Julia Miller	do 26	July 28		2	
7	Mary Katin	do 27	do 27			6
8	Barbara Messmer	do 27	do 30			8
9	Jane Dowd	do 29			3	12
10	Jane McNeive	do 29		R.	2	
11	Mary Donahue	do 30	July 31	R.	1	
12	Margaret Glennon	do 31	August 4		1	2
13	Agnes Matthews	do 31			3	
14	Elizabeth Chatillon	August 1	August 1	R.	2	
15	Margaret Devine	do 1				12
16	Catharine Eidenberg	do 1	August 2	R.		18
17	Catharine Freund	do 1	do 6		1	
18	Ellen Ward	do 1	do 4		6	12
19	Christina Waters	do 1	do 6		3	

20	Ellen Campbell	do	2	do	5	---	3	4
21	Celia Dunleavy	do	2	do	9	---	8	12
22	Elizabeth Loughman	do	2	do	5	---	3	12
23	Mary Russell	do	2	do	3	---	1	12
24	Patrick McGuire	do	2	do	3	---	2	---
25	Maria Barry	do	3	do	4	---	1	12
26	Emma Leiber	do	3	---	---	R.	2	---
27	Ellen Callahan	do	3	August 6	---	---	2	12
28	James Wilson	do	4	---	---	R.	3	---
29	Emily Banham	do	5	August 6	---	---	1	---
30	Charlotte Da Cunha	do	5	---	---	R.	1	---
31	Grace Douglass	do	5	August 6	---	---	---	18
32	Maria Handley	do	5	do 9	---	---	4	---
33	Pamela McGee	do	5	do 5	---	---	---	2
34	Nancy McCormick	do	5	do 8	---	---	3	4
35	Maria Reed	do	5	do 6	---	---	1	---
36	Margaret Collins	do	6	do 8	---	---	3	---
37	Hannah Clancy	do	6	---	---	R.	3	---
38	Mary Little	do	6	---	---	R.	2	---
39	Margaret Quinn	do	6	August 6	---	---	---	12
40	Margaret Ryan	do	6	do 9	---	---	3	12
41	Bridget Skelly	do	6	do 11	---	---	5	12
42	Rose Baumgartner	do	7	do 9	---	---	2	12
43	Angeline King	do	7	---	---	R.	2	---
44	Ellen Lacy	do	7	---	---	R.	4	---
45	Ellen Smith	do	7	Aug'st 10	---	---	3	---
46	Ellen Fairly	do	8	---	---	R.	1	12

APPENDIX A--Continued.

Number.	NAME.	Attacked.	Died.	Recovered (R.)	Duration of attack.	
					Days.	Hours.
47	Margaret McTiernan	August 8	-----	R.	2	-----
48	Caroline Tegeler	do 8	August 9	-----	1	12
49	Honora Hant	do 9	do 10	-----	1	-----
50	James Collins	do 9	do 10	-----	1	12
51	Samuel Eisgran	do 10	do 12	-----	3	-----
52	Rose Giligan	do 10	do 11	-----	1	12
53	Ann Reynolds	do 10	do 12	-----	2	6
54	James Mulligan	do 11	do 11	-----	-----	12
55	Ellen Longfield	do 12	do 14	-----	2	12
56	Andrew Kardner	do 12	do 15	-----	3	12
57	Bridget Buckley	do 13	-----	R.	3	-----
58	Jane Cunningham	do 13	Aug'st 16	-----	3	12
59	Mary Cullen	do 13	do 14	-----	1	12
60	Elizabeth Hawkins	do 14	do 15	-----	1	12
61	Henry Dunn	do 14	do 18	-----	4	-----
62	James Delaney	do 16	do 22	-----	6	12
63	John Donovan	do 16	do 17	-----	1	6
64	Sigismund Elbert	do 16	do 18	-----	3	-----
65	Francis Welch	do 16	-----	R.	2	-----

66	Mary Jackson	do	16	do	18	2	8
67	Ann Moore	do	16	do	17	1	
68	Mary Ann Weaver	do	17			1	
69	Ann Brown	do	17			3	
70	Thomas Sullivan	do	18	Aug'st 18			
71	Bridget Wilson	do	19	do 21		2	
72	Ann Agnus Cotter	do	20	do 22		1	12
73	Elizabeth Finn	do	20	do 22		2	
74	Michael Murphy	do	23	do 23			10
75	William Barnes	do	24	do 28		4	
76	Philip Donohue	do	24	do 26		2	10
77	Josephine McGrath	do	24	do 26		2	
78	Bridget McCue	do	24			2	
79	Mary Helen Grim	do	24			1	
80	John Braden	do	26	Aug'st 27		2	
81	Walter A. J. Robbins	do	28				6
82	Honora Desmond	do	28	Aug'st 28			12
83	Eliza Campbell	do	29	do 29			11
84	Bridget Murray	do	31	do 31			
85	Mary or Bridget Farrell	Sept.	31	Sept. 2		2	
86	Ann M. Stadler	do	1	do 2		1	
87	Henry Schauff	do	5	do 5			
88	James Bye	do	5	do 6		1	
89	Peter Tyrrell	do	7	do 12		5	
90	John Orehard	do	8	do 8			
91	Eliza McWhood	do	10				
92	George Hertsell	do	11	Sept. 12		1	
		do	12				

APPENDIX—Continued.

Number.	NAME.	Attacked.	Died.	Recovered (R.).	Duration of attack.	
					Days.	Hours.
93	Susan Garland	Sept. 15	Sept. 16	—	1	—
94	Mary Ann Weaver	do 15	—	R.	—	—
95	Bridget Walsh	do 16	Sept. 17	—	1	—
96	Ann Slavin	do 20	—	R.	—	—
97	James Moran	do 23	Sept. 25	—	2	—
98	Mary Mulshine	do 27	do 28	—	1	—

RECAPITULATION.

Retreat:

Hall 1.....	10	
Hall 2.....	12	
Hall 3.....	10	
	<hr/>	32

Pavilion:

A.....	17	
B.....	7	
	<hr/>	24

Lodge:

Males.....	6	
Females.....	8	
	<hr/>	14

Main building:

North wing—Males.....	18	
South wing—Females.....	10	
	<hr/>	28

Total.....	<hr/>	98
	<hr/>	

APPENDIX B.
Return of cases at the Workhouse.

No.	NAMES.	Age.	Time.		Attacked.	Died.	Recover- ed R.
			Months.	Days.			
1	Fanny Little	19	5	5	July 22	July 23	R.
2	Mary Creighton	40		5	27	27	
3	Rose Dailey	40		5	27	27	
4	Julia Campen	24		6	27	27	
5	Nora Leighton	21	4	10	27		
6	Mary Miner	30		15	27	July 28	
7	Bridget Booth	33	2	10	27	28	
8	Kitty Riley	18		9	27	28	
9	Margaret Murray	27	4	14	27	29	
10	Mary Baker	27	3	12	27	28	
11	Margaret Thompkins	25	3	15	27	31	R.
12	Mary Gaffney	29	1	12	27	28	
13	Bridget Beny	37	1	5	27	28	
14	Catharine Smith	50	1	17	27	28	
15	Mary Myers	40	1	22	27	28	
16	Mary Ann Harris	30		11	27	August 1	
17	John Haskins	48		2	27	July 28	
18	Mary Barrows	56		14	28	29	
19	Margaret Garraghty	30	3	7	28	29	
20	Jane Smith	19		9	28	August 3	

21	Kate Bailey	27	5	16	July	28	R.
22	Mary Zinger	42	---	22	---	28	R.
23	Margaret Holmes	40	1	1	July 29	28	
24	Fanny Nelson	23	4	20	Aug. 1	28	
25	Lizzie Johnson	47	1	10	---	28	R.
26	Lizzie Hennessy	19	---	10	---	28	R.
27	Lena Mortoux	16	---	6	---	28	R.
28	Mary Bartlett	55	---	10	July 29	28	
29	Michael Delaney	65	1	8	---	28	
30	Hannah O'Neil	48	---	19	---	29	R.
31	Eliza Anderson	45	1	5	Aug. 4	29	
32	Catharine O'Neil	39	1	21	July 30	29	
33	Peter Leonhardt	46	5	26	---	29	
34	Bridget Bell	45	---	12	Aug. 5	30	
35	Jane Daley	49	---	6	July 31	30	
36	Betsey Short	45	5	11	Aug. 4	30	
37	Catharine Vincent	21	---	15	2	30	
38	Ellen Kelly	29	---	4	8	30	
39	Josephine Austin	20	1	8	---	30	R.
40	Mary Smith	22	---	19	---	30	R.
41	Mary J. Brogan	50	---	4	Aug. 1	30	
42	John Murphy	17	1	19	July 31	30	
43	Margaret Sheehan	60	---	9	Aug. 1	30	
44	Edward Fife	30	5	27	July 30	30	
45	Alexander Lairrie	46	9 yrs.	---	---	31	R.
46	John Golden	40	---	7	Aug. 1	31	
47	Margaret Smith	36	---	17	---	31	R.

APPENDIX B—Continued.

No.	NAMES.	Ago.	Time.		Attacked.	Died.	Recover- ed R.
			Months.	Days.			
48	Mary Connor	40	1	1	July 31	Aug. 4	
49	Josephine Reed	23		4	31	1	
50	Catharine Johnson	54	2	11	31	1	
51	Maggie Wilson	27	1	13	31		R.
52	Emma Brown	26		6	31	Aug. 1	
53	Rhoda Carpenter (B)	29	3	29	31		R.
54	Mary Donovan	36		23	31	Aug. 4	
55	Ellen Heffern	40		17	31	5	
56	Hannah Simpson	53	1	7	31	2	
57	Bridget Skelly	38		7	Aug. 1	8	
58	Ann Clark	28		9	1	2	
59	Mary Hughes	17		15	1	2	
60	Bridget McGovern	50	3		1	1	
61	Ann Stevens	21		22	1		R.
62	Louisa Johnson	45	2	23	1	Aug. 2	
63	Margaret Johnson	25	3	1	1		R.
64	Jane Roberts	27		5	1	Aug. 2	
65	Eliza Henderson	27	5	13	1	2	
66	Rose Boylan	48	1	24	1	2	
67	Fanny Osborne	28	2	4	1		R.
68	Francis Jackson (B)	42		7	1	Aug. 6	

	17	11	Aug.	1	Aug.	1
Charles Houser	17	11		1	Aug.	1
Joseph Suck	57	6		1		2
Peter Geiser	38	3		1		1
Michael Gleason	54	18	4	1		2
Timothy Reynolds	42	5		1		2
Mary E. Denike (B)	18	23		1		8
Virginia Smith (B)	26	18	2	1		
Robert Farlow	53	21	1	2	Aug.	2
Thomas Hester	22	27		2		
Thomas Jones	24	27	1	2	Aug.	3
John Stevenson	27	19		2		
David S. Lyon	51	27		2	Aug.	2
George Bedford (B)	28	19		2		2
Michael O'Brien	67	26		2		3
Michael Grady	28	14		2		3
Ann Jackson	63	22	2	2		
Martha Grimes	35	14	5	2		
Margaret Morell	24	17		2		
Bridget McCaffrey	55	22		2	Aug.	2
Mary Hayes	27			2		
Mary A. Quinn	22	13		2	Aug.	2
Margaret Hopkins	26	20	3	2		2
Ellen Conway	36	1	3	2		4
Mary Watson	27	7		2		
Ellen Hood	65	21	2	2	Aug.	2
Sarah Jackson (B)	16	5		2		
Christina Horn	18	23		2		

APPENDIX B—Continued.

No.	NAMES.	Age.	Time.		Attacked.	Died.	Recover- ed R.
			Mos.	Days.			
96	Jessie Skillman	21	---	8	August 2	August 2	
97	Mary Martin	28	---	5	do	do	
98	Mary Boos	40	---	8	do	do	
99	Bridget O'Keefe	30	1	22	do	do	
100	Emma Simpson	35	---	6	do	do	
101	Patrick Muldoon	28	---	6	do	do	
102	Terence Duffy	74	---	7	do	do	
103	Michael Corlan	---	---	---	do	do	R.
104	Margaret Ryan	24	3	14	do	August 3	
105	Catharine Mills	28	---	23	do	---	R.
106	Josephine Wilson (B)	20	2	4	do	---	R.
107	Mary Hennessy	30	---	15	do	August 3	
108	Mary Wilson	28	---	4	do	do	
109	John Tucker	39	---	---	do	do	
110	William Wilson	40	---	10	do	do	R.
111	Mary Neville	33	1	28	do	August 3	
112	Michael Dooley	25	5	---	do	do	
113	Mary O'Brien	75	---	1	do	do	
114	Delia Fay	30	4	20	do	do	R.
115	Catharine Hazard	35	---	3	do	August 4	
116	Hannah Downey	70	---	21	do	do	
117	Kate McHugh	20	---	11	do	do	

APPENDIX B—Continued.

No.	NAMES.	Age.	Time.		Attacked.	Died.	Recover- ed (R.)
			Months.	Days.			
145	Lottie Edwards	22	3	11	August 4	August 4	R.
146	Michael McClusky	23	1	15	do 4	do 4	R.
147	Michael Malone	60	2	8	do 4	August 4	
148	Thomas Tobin	41	2	6	do 4	do 4	
149	John Kelly	22	2	25	do 4	do 7	
150	Josephene Woodruff	22	2	6	do 4	do 5	
151	Eliza Baker	42	2	4	do 4	do 5	
152	Isabella Jones	60	2	7	do 4	do 5	
153	William Finlay	17	2	5	do 4	do 5	
154	George W. James	21	2	9	do 4	do 5	R.
155	Matthew McNally	48	3	8	do 4	August 5	R.
156	Michael Hackett	37	3	9	do 4	do 5	
157	William Lynch	20	3	1	do 4	do 5	
158	Mary Baker	49	3	7	do 4	do 5	
159	Jane Doyle	33	3	29	do 5	do 7	
160	Charles Tuttle	44	3	29	do 5	do 7	R.
161	Catherine Riley	23	3	27	do 5	August 7	
162	Delia Kavanah	50	3	7	do 5	do 5	
163	John Foley	55	3	26	do 5	do 5	
164	James Patterson	49	3	26	do 5	do 5	R.
165	Henry Wilson (B)	49	3	26	do 5	do 5	

166	Ellen Murdock	18	---	7	August 5	Aug.	11	
167	Edward Sweeny	36	---	27	do	do	5	
168	Mary Johnson (B)	23	---	3	do	do	8	R.
169	Catharine Duffy	26	---	4	do	---	---	
170	Eliza M. Carson	37	---	5	do	Aug.	6	
171	John Moore	28	---	2	do	do	7	
172	Susan Seine	34	---	6	do	---	---	R.
173	Julia Sullivan	19	---	21	do	Aug.	11	
174	Leroy Harrington	45	---	11	do	do	8	
175	John Brownlee	34	---	25	do	do	9	
176	Catharine Kelly	39	---	4	do	do	8	
177	Mary McNamara	42	---	---	do	do	8	
178	Marcus Polinths	63	1	9	do	do	9	
179	Caroline Redman	21	---	7	do	do	13	
180	Ellen McCauley	26	---	2	do	do	13	
181	Mary A. Sebastopol	34	---	21	do	do	15	
182	Ann Bauner	39	---	7	do	do	14	
183	Rosannah Mack	25	---	5	do	do	15	
184	George McMenomy	69	---	12	do	do	20	
185	Rosa McDermott	20	---	6	do	do	15	
186	Mary Quinn	25	---	14	do	do	16	
187	Mary McKenna	68	---	6	do	do	16	
188	Owen McDonald	65	---	8	do	do	19	
189	Mary Kelly	30	---	14	do	---	---	R.
190	Catharine Dorsey	25	1	10	do	Aug.	23	
191	Mary Pearsall	30	---	6	do	---	---	R.
192	Mary Benson	50	---	4	Sept.	Sept.	8	

APPENDIX B—Continued.

No.	NAMES.	Age.	Time.		Attacked.	Died.	Recover- ed R.
			Months.	Days.			
193	Charles Laborda.....	65	.....	23	Sept. 11.....	Sept. 13.....	.....
194	Thomas Riley.....	25	.....	4	do 13.....	do 14.....	.....
195	Mary A. Mallon.....	22	.....	20	do 13.....	do 14.....	.....
196	Thomas Healey.....	40	.....	3	do 13.....	do 15.....	.....
197	John T. Butler.....	22	.....	4	do 14.....	do 15.....	.....
198	William Maher.....	60	.....	5	do 14.....	do 15.....	.....
199	Laurence Conan.....	38	.....	6	do 14.....	do 15.....	.....
200	August Longshaw.....	46	.....	7	do 15.....	do 16.....	.....
201	Jane Smith.....	24	.....	17	do 16.....	do 17.....	.....
202	Dennis Fay.....	19	.....	6	do 20.....	do 21.....	.....
203	James Flahey.....	40	.....	20	do 22.....	do 23.....	.....
204	William Campbell.....	52	.....	15	do 23.....	do 24.....	.....

APPENDIX C.
Return of cases at the Alms House.

No.	NAME.	Age.	Ward.	Time of residence.			Attacked.	Died.	Recov'd.
				Years.	Months.	Days.			
1	Catharine Tighe	35	54	2	6	...	July 30	July 30	
2	Mary Donnelly	38	54	...	2	...	do 30	do 31	
3	Mary Fanen	29	54	...	1	...	do 30	do 31	
4	Annie E. Conniton	31	54	1	10	...	do 30	do 31	
5	John Verlandis	18	2	2	4	...	do 31	do 31	
6	Susan Manning	54	54	4	3	...	do 31	do 31	
7	Mary Reed	21	54	...	1	...	do 31	do 31	
8	Irene Spencer	25	54	1	4	...	do 31	do 31	
9	Ann Riley	30	54	2	...	...	do 31	August 1	
10	Mary Manning	51	54	...	10	...	do 31	do 1	
11	Catharine McGrath	54	54	4	2	...	do 31	do 1	
12	Elizabeth Dott	51	54	5	3	...	do 31	do 2	
13	Mary Kesnett	46	54	1	...	...	do 31	do 2	
14	Catherine Hurley	51	54	1	2	...	do 31	do 2	
15	Louise Valland	36	33	6	11	...	August 1	do 2	
16	Ann Hicks	44	54	2	11	...	do 1	do 2	
17	Ann E. Rodgers	30	54	...	4	...	do 1	do 2	
18	Mary Borgstader	45	45	...	2	...	do 2	do 3	
19	Mary O'Brien	50	54	...	10	...	do 2	do 3	
20	Thomas Knowles	28	24	...	4	...	do 2	do 4	

APPENDIX C—Continued.

No.	NAME.	Age.	Ward.	Time of residence.			Attacked.	Died.	Recov'd.
				Years.	Months.	Days.			
21	Eva Crumbie	30	54	—	—	—	August 3	—	R.
22	Carrie Gee	16	54	—	—	—	do 3	—	R.
23	R. Barry	26	54	—	—	—	do 3	—	R.
24	Kate McGue	35	54	—	2	15	do 4	August 4	—
25	John Gordon	23	27	—	2	15	do 4	do 4	—
26	Margaret Murray	73	28	1	—	—	do 4	do 4	—
27	Bridget Noon	100	26	—	—	25	do 4	—	R.
28	C. Earley	58	B. H.	—	—	—	do 4	—	R.
29	M. Rose	40	N.	—	—	—	do 4	—	R.
30	Robert McFarland	60	G. H.	—	—	—	do 4	August 4	—
31	Margaret Delaney	40	54	—	1	—	do 4	do 4	—
32	Mary Cowan	35	54	1	5	—	do 4	—	R.
33	James Murphy	40	—	—	—	—	do 5	August 5	—
34	Catharine Robertson	43	54	—	2	—	do 5	do 5	—
35	Rosanna Eckhardt	53	54	2	10	—	do 5	do 5	—
36	Helena Meyers	24	50	1	—	—	do 5	do 7	—
37	Elizabeth Swanzer	22	50	—	3	—	do 5	do 10	—
38	Elizabeth Albro	60	54	—	—	21	do 5	do 5	—
39	Michael Fritz	69	22	—	4	—	do 5	do 5	—
40	Ann Edwards	60	36	4	3	—	do 5	do 5	—
41	Ellen Flanagan	31	45	1	11	—	do 5	do 5	—
42	Mary A. Romer	57	39	7	10	—	do 5	do 6	—

	30	22	1	do	6	August 7
Morris Kelly	30	22	1	do	6	August 7
William Carroll	29	27	3	do	6	do
Catharine Irvin	78	31	10	do	6	do
Thomas Shays	75	C. H.	1	do	6	do
Samuel Gubbins	39	3	3	do	6	do
Jane Hays	59	35	11	do	6	do
Catharine Williams	15	25	1	do	6	do
John Connolly	40		5	do	7	do
Ann Huestis	49	36	3	do	7	do
Joseph Roshon	59	C. H.	4	do	7	do
Bridget Connolly	32	47		do	7	do
Thomas Muir	65	28	5	do	7	do
Catharine Moran	45	33	2	do	8	do
C. Stultz	58	3		do	8	do
Charles Miller	56	2		do	9	Aug'st 11
Ann Mons	71	37		do	9	do
Patrick Seagriff	52			do	9	do
Harriet Adams	38	28		do	10	do
Mary Carr	56	38		do	11	do
Mathew Furst	45	C. H.		do	11	do
Alice Cronin	42	38		do	12	do
Mary Hand	20	45	7	do	12	do
Catharine Edwards	61	33	4	do	12	do
H. Welch	30	41		do	12	do
Hannah Fitzgerald	28	50		do	12	do
Sarah Mahan	80	28	1	do	13	Aug'st 13
Mary Fitzpatrick	55	34	9	do	13	do

APPENDIX C—Continued.

No.	NAME.	Age.	Ward.	Time of residence.			Attacked.	Died.	Recov'd.
				Years.	Months.	Days.			
70	Catharine Garrigan.....	50	26	---	2	---	Aug'st 14	Aug'st 14	
71	Catharine Talbot.....	66	27	2	---	---	do 14	do 14	
72	Julia Gibbons.....	21	40	---	5	---	do 14	do 14	
73	Catharine Fagan.....	28	54	3	11	---	do 14	do 15	
74	Ellen Coyle.....	61	52	1	---	11	do 15	do 15	
75	William Thompson.....	50	5	---	---	---	do 15	---	
76	Hannah Negan.....	30	39	---	---	---	do 15	---	R.
77	Rachael Van Doran.....	33	39	---	---	---	do 16	---	R.
78	S. A. Edwards.....	55	3	---	---	---	do 16	---	R.
79	Sarah Murray.....	31	28	---	1	15	do 16	Aug'st 17	
80	Philip Hannavan.....	Infant	33	---	1	21	do 17	do 18	
81	Margaret Reddy.....	39	32	9	1	---	do 18	do 19	
82	Fanny Hanon.....	67	28	3	6	---	do 19	do 19	
83	Ellen Mitchell.....	46	27	---	10	---	do 19	do 19	
84	Hannah Dean.....	70	30	1	2	---	do 19	do 20	
85	Joanna Cusick.....	28	49	---	---	---	do 19	---	R.
86	Maggie Handley.....	16	41	---	---	---	do 19	---	R.
87	B. Kankerbecker.....	80	N. B.	---	---	---	do 20	---	R.
88	Catharine Barry.....	40	27	---	---	---	do 20	---	R.
89	Eliza Holland.....	35	34	---	---	---	do 20	---	R.
90	Joshua Folk.....	59	14	---	10	---	do 20	Aug'st 21	
91	Ebenezer Amos.....	65	14	---	3	---	do 21	do 21	

92	Jane McKown	34	50				do	21	Aug'st 27	R.
93	— Shepherd	25	B. H.				do	21		
94	Mary Ryan	23	53	7			do	22	Aug'st 24	
95	Mary Grant	23	28		1	15	do	22	do 24	
96	Christina Van Deusen	76	28		2		do	23	do 24	
97	Rose McCarty	70	25			6	do	23	do 24	
98	Susan O'Rielly	21	50	4	6		do	23	do 24	
99	Jane Drew	52	28		2		do	25	do 24	
100	Catharine Smith	51	32		1	15	do	23	do 25	
101	John Mead	54	21	1	1		do	24	do 24	
102	Margaret Leahy	33	26	4	10		do	24	do 24	
103	Mary Baker	61	39	5	1		do	25	do 26	
104	Mary Mehan	61	26		1		do	25	do 25	
105	Fanny O'Brien	26	50			27	do	25	do 29	
106	John Neale	69	8	4			do	30	do 30	
107	Anne Stafford	60	54				Sept.	6	Sept. 9	
108	George Reed	48	4	1	4		do	7	do 13	
109	Sarah Price	58	36				do	10		
110	James Greighton	72	9	1	10		do	11	Sept. 12	
111	Ann Sharidan	51			4		do	12	do 17	

APPENDIX D.

Return of cases at the Penitentiary.

No.	NAMES.	Age.	Time of residence.		Attacked.	Died.	Recov'd.
			Months.	Days.			
1	Daniel Hand	22	2	25	July 30	-----	R.
2	William Buckley	35	9	13	do 30	July 31	-----
3	Maggie Mandattan	18	3	6	August 1	-----	R.
4	Patrick McDonald	23	2	11	do 2	-----	R.
5	George Phillips	25	1	24	do 3	-----	R.
6	Henry Samuels	-----	-----	23	do 2	-----	R.
7	Albert Miller	21	1	5	do 2	Aug'st 16	-----
8	Alex. Adams	26	-----	28	do 4	do 8	-----
9	Thomas Smith	21	2	13	do 4	do 7	-----
10	Thomas McCormack	38	-----	25	do 4	do 6	-----
11	Chas. Winnamaker	22	2	20	do 4	-----	R.
12	Anne Hines	45	8	22	do 5	-----	R.
13	George Phinney	34	4	1	do 7	August 7	-----
14	Wm. Smith	48	1	15	do 7	do 7	-----
15	Francis B. Kennedy	22	1	-----	do 10	-----	R.
16	Edward Lynch	27	-----	$\frac{1}{2}$	do 12	-----	R.
17	Henry Bremer	19	-----	2	do 12	-----	R.
18	Leon Durand	22	3	13	do 14	-----	R.
19	Mary Ann Williams	27	-----	30	do 20	-----	R.

APPENDIX E.

Return of Cases at Charity Hospital.

No.	NAMES.	Age.	Ward.		Time of residence.		Attacked.	Died.	Recov'ed.
			Male.	Female.	Months.	Days.			
1	John McGowan	28	8	---	1	12	July 9	---	R.
2	James Hatton	45	5	---	---	---	do 20	July 21	---
3	Thomas Conroy	50	Lent	---	3	11	do 21	---	R.
4	A. Swift alias Bindell	22	---	6	---	$\frac{1}{2}$	do 31	---	R.
5	Eliza Cowan	29	---	2	---	---	August 3	August 5	---
6	Ellen Clifton	20	---	5	---	14	do 3	do 7	---
7	Enoch Holland	47	2	---	---	21	do 3	do 5	---
8	Mary Ryan	---	---	3	---	3	do 4	do 8	---
9	Mary Kane	28	---	13	3	12	do 5	do 6	---
10	Mary Barden	55	S. P.	Hos.	3	26	do 5	do 6	---
11	Ann Fay	40	---	12	2	18	do 5	do 6	---
12	Thomas Gidney	60	5	---	1	14	do 5	do 6	---
13	Robert Clark	34	5	---	1	14	do 5	do 6	---
14	Ellen Barry	36	---	16	4	6	do 5	do 6	---
15	Fanny Ward	19	---	14	6	16	do 5	do 7	---

APPENDIX E--Continued.

No.	NAMES.	Age.	Ward.		Time of residence.		Attacked.	Died.	Recov'ed
			Male.	Female.	Months.	Days.			
16	Susan Murphy.	25	---	4	5	5	August 7	August 8	---
17	Jane Berry (B).	39	---	16	---	3	do 7	do 9	---
18	Kate McCauley	25	---	4	4	19	do 7	do 8	---
19	Lottie Smith	25	---	2	---	20	do 7	do 8	---
20	Bridget McIntyre	70	---	12	2	7	do 8	do 9	---
21	Charles Manning	49	Private room.	---	---	---	do 8	do 9	---
22	James Fallon.	65	10	---	2	23	do 8	do 10	---
23	Catherine Welsh	26	---	6	4	2	do 9	do 10	---
24	Robert Archless	30	1	---	---	10	do 10	do 11	---
25	Mary A. Swain.	32	---	9	---	6	do 10	do 11	---
26	Ann Cashman.	59	---	13	2	25	do 10	do 11	---
27	William O'Hara.	65	2	---	---	10	do 10	do 11	---
28	Robert O'Brien	33	10	---	---	17	do 11	do 11	---
29	Michael Maloney	50	10	---	2	26	do 11	do 12	---
30	Bridget Curran	65	---	12	---	20	do 11	do 12	---
31	Catharine Riley	47	---	2	---	1	do 11	do 12	---
32	Rosanna Hamilton	23	---	10	1	24	do 11	do 13	---
33	John Davy.	35	10	---	---	22	do 13	do 14	---
34	Mary Johnson	23	---	16	---	28	do 13	do 14	---
35	Augusta Potter	22	---	16	---	15	do 14	do 16	---

36	William Marvin	45	10	---	1	2	do	14	do	18	---
37	Matthew Fuller	58	2	---	2	2	July	15	do	15	---
38	Mary Eckles	19	---	3	---	21	do	15	do	18	---
39	William Graham	57	13	---	1	12	do	15	do	18	---
40	Elizabeth McAuley	22	---	6	1	19	do	17	do	18	---
41	Margaret Cheesbro	26	---	9	7	9	do	17	do	19	---
42	Catharine Dickerson	20	---	1	---	4	do	17	do	22	---
43	Patrick McKenna	35	10	---	---	16	do	18	---	---	R.
44	Julia Smith	23	---	9	1	11	do	18	---	---	R.
45	Emma Hays	28	---	16	7	19	do	19	---	---	R.
46	Ellen Martin	34	---	5	2	16	do	22	Aug.	23	---
47	Margaret Fitch	25	---	9	3	28	do	25	do	26	---
48	Amelia Roach	40	---	9	1	19	do	26	do	27	---
49	Charles Carrol	50	---	13	---	---	Sept.	10	Sept.	12	---
50	Mary Conway	22	---	---	1	---	do	12	---	---	R.

APPENDIX F.

Daily census and mortality of infants in almshouse, from July 1st to September 1st, 1866. (Infants at mothers' breasts and "nurse children.")

DATE.	No. of mother's children in building.	Deaths among same.	No. of nurse-children in building.	Deaths among same.	Total number in building.	Total number of deaths.
July 1-----	86	1	84	-----	171	1
2-----	84	-----	87	1	171	1
3-----	81	-----	88	1	169	1
4-----	81	-----	88	-----	169	-----
5-----	80	-----	87	5	167	5
6-----	83	-----	88	-----	171	-----
7-----	83	1	91	6	174	7
8-----	83	-----	91	-----	174	-----
9-----	79	2	87	8	166	10
10-----	79	-----	81	1	160	1
11-----	76	-----	81	-----	157	-----
12-----	80	1	84	2	164	3
13-----	77	1	84	5	161	6
14-----	79	2	84	6	133	8
15-----	79	-----	84	-----	163	-----
16-----	77	-----	82	2	159	2
17-----	77	-----	81	4	158	4
18-----	78	3	78	4	156	7
19-----	78	2	80	4	158	6
20-----	77	1	79	-----	156	1
21-----	79	-----	81	1	160	1
	1,676	14	1,770	50	3,447	64
Average-----	79.81	0.67	84.33	2.38	164.14	3.05
Percentage of deaths on total No. infants-----		0.83		2.82		1.86

APPENDIX F—Continued.

DATE.	No. of mother's children in building.	Deaths among same.	Number of nurse-children in building.	Deaths among same.	Total number in building.	Total number of deaths.
July 22-----	79	-----	81	-----	160	-----
23-----	81	2	86	7	167	9
24-----	73	-----	85	1	158	1
25-----	72	-----	86	3	158	3
26-----	74	-----	87	3	161	3
27-----	71	-----	91	3	162	3
28-----	72	1	92	4	164	5
29-----	72	-----	92	-----	164	-----
30-----	76	1	90	2	166	3
31-----	78	1	96	4	174	5
Aug. 1-----	74	1	88	7	163	8
2-----	76	-----	92	-----	168	-----
3-----	76	1	90	7	166	8
4-----	77	-----	87	6	164	6
5-----	77	-----	87	-----	164	-----
6-----	73	1	74	17	147	18
7-----	73	1	74	4	147	5
8-----	73	-----	70	4	143	4
9-----	76	-----	65	6	141	6
10-----	76	1	63	3	139	4
11-----	77	-----	55	8	132	8
	1,576	10	1,731	89	3,310	99
Average-----	75.05	0.48	82.52	4.24	157.57	4.71
Percentage of deaths on total No. infants.	-----	0.63	-----	5.13	-----	2.99

ANNUAL REPORT OF THE
APPENDIX F—Continued.

DATE.	No. of mother's children in building.	Deaths among same.	Number of nurse-children in building.	Deaths among same.	Total number in building.	Total number of deaths.
Aug. 12	77	---	55	---	132	---
13	75	3	53	5	128	8
14	75	1	50	4	125	5
15	70	3	46	4	116	7
16	71	---	47	---	118	---
17	72	1	46	1	118	3
18	73	---	49	1	122	1
19	73	---	49	---	122	---
20	70	1	52	1	122	2
21	73	---	54	1	127	1
22	74	---	52	2	126	2
23	73	3	51	1	124	4
24	73	---	51	1	124	1
25	72	---	52	1	124	1
26	72	---	52	---	124	---
27	72	---	48	5	120	5
28	70	---	51	1	121	1
29	70	---	52	4	121	4
30	68	2	52	1	120	3
31	68	---	56	1	124	1
Sept. 1	67	1	59	1	126	2
	1,508	15	1,077	36	2,514	51
Average	71.81	0.71	51.24	1.71	123.05	2.43
Percentage of deaths on total No. infants.	---	0.99	---	3.34	---	1.93

APPENDIX F—Continued.

Daily census and mortality of infants in almshouse, from July 1st to September 1st, 1865, inclusive.

DATE.	No. of mother's children in building.	Deaths among same.	Number of nurse-children in building.	Deaths among same.	Total number of infants in building.	Total number of deaths.
July 1.....	82	-----	71	1	153	1
2.....	82	-----	71	-----	153	-----
3.....	81	1	72	1	153	2
4.....	81	-----	72	-----	153	-----
5.....	81	1	67	5	148	6
6.....	77	2	66	2	143	4
7.....	77	-----	67	1	144	1
8.....	77	-----	69	-----	146	-----
9.....	77	-----	69	-----	146	-----
10.....	76	3	72	3	148	6
11.....	76	-----	74	3	150	3
12.....	76	-----	73	1	140	1
13.....	78	-----	75	-----	153	-----
14.....	78	-----	73	1	151	1
15.....	77	1	72	2	149	3
16.....	77	-----	72	-----	149	-----
17.....	78	1	67	4	145	5
18.....	78	-----	70	1	148	1
19.....	75	1	71	2	146	3
20.....	76	-----	73	2	149	2
21.....	75	1	73	4	148	5
Total	1,635	11	1,489	33	3,124	44
Daily average	77.86	0.52	70.90	1.57	148.76	2.09
Percentage of deaths on total No. infants	-----	0.67	-----	2.22	-----	1.41

ANNUAL REPORT OF THE
APPENDIX F—Continued.

DATE.		No. of mother's children in building.	Deaths among same.	Number of nurse-children in building.	Deaths among same.	Total number of infants in building.	Total number of deaths.
July	22	78	-----	71	1	149	1
	23	78	-----	71	1	149	1
	24	79	3	74	3	153	6
	25	71	1	73	1	144	2
	26	71	-----	71	6	142	6
	27	67	2	71	5	138	7
	28	67	-----	73	1	140	1
	29	69	-----	69	5	138	5
	30	69	-----	69	-----	138	-----
	31	67	2	65	3	132	5
Aug.	1	65	1	64	2	129	3
	2	68	-----	66	5	134	5
	3	70	-----	65	3	135	3
	4	74	-----	61	5	135	5
	5	78	-----	59	3	137	3
	6	78	-----	59	-----	137	-----
	7	69	2	57	1	126	3
	8	68	1	56	2	124	3
	9	71	-----	55	2	126	2
	10	67	1	53	4	120	5
	11	68	-----	53	1	121	1
Total		1,492	13	1,355	54	2,847	67
Daily average		71.05	0.62	64.52	2.57	135.57	3.19
Percentage of deaths on total No. infants		-----	0.88	-----	3.98	-----	2.35

APPENDIX F—Continued.

DATE.	No. of mother's children in building.	Deaths among same.	Number of nurse-children in building.	Deaths among same.	Total number infants in building.	Total number of deaths.
Aug. 12	68	.....	52	1	120	1
13	68	.....	52	.....	120	.....
14	68	.....	45	6	113	6
15	70	.....	49	1	119	1
16	69	.....	51	1	120	1
17	67	.....	48	3	115	3
18	67	1	49	.....	116	1
19	68	.....	50	.....	118	.....
20	68	.....	50	.....	118	.....
21	68	.....	49	3	117	3
22	69	.....	48	1	117	1
23	71	.....	52	.....	123	.....
24	71	.....	55	.....	126	.....
25	73	1	56	3	129	4
26	72	2	55	1	127	3
27	72	.....	55	.....	127	.....
28	68	.....	56	.....	124	.....
29	66	.....	55	3	121	3
30	66	.....	54	1	120	1
31	70	.....	55	.....	125	.....
Sept. 1	68	1	58	4	126	5
Total	1,447	5	1,094	28	2,541	33
Daily average	68.90	0.24	52.10	1.33	122.00	1.57
Percentage of deaths on total No. infants .....	.....	0.34	.....	2.56	.....	1.30

APPENDIX G.
Return of cases among pauper and prison laborers at Ward's Island.

No.	NAME.	Time at Workhouse.		Time.		Attacked.	Died.	Recov'd.
		Days.	Months.	Days.				
1	Peter Ford (a)	2	---	2	---	July 27	July 28	
2	Hugh McCann	29	---	---	---	do 29	do 29	
3	Henry Stiver (b)	---	---	---	---	do 29	do 31	
4	Mary Gilmarin(c)	3	1	8	---	do 29	---	R.
5	Eliza Edge	8	---	16	---	do 29	---	R.
6	Thomas Barrett (d)	23	---	28	---	do 30	July 30	
7	Michael Kennedy	3	1	4	---	do 30	do 30	
8	Jane Diltz	---	---	---	---	do 30	do 31	
9	Peter Reilly (e)	---	1	5	---	do 31	---	R.
10	William Moore (b)	9 mos.	---	30	---	August 1	August 2	
11	Hattie Day (f)	3 days.	---	3	---	do 2	do 4	
12	William Lynch	---	---	---	---	do 2	do 5	
13	William Scott	---	---	---	---	do 3	---	R.

(a.) Peter Ford came, with four others, from the Workhouse, July 25th; the other four escaped the cholera.

(b.) Henry Stiver and William Moore, both lunatics, were employed in the pit burying the dead.

(c.) Mary Gilmarin came from Workhouse July 23d, the day the first case died there.

(d.) Thomas Barrett was nurse to cases Nos. 1 and 2.

(e.) Peter Reilly, the night before his attack, had laid in some hay upon which the corpses of the previous cholera patients had been laid during the night.

(f.) Hattie Day came from Workhouse four days previous to attack.

About fifty men were employed on Ward's Island, part of whom worked in the Cometary. They all slept in one large room. The sick were placed in a tent, erected for that purpose.

Where time is not stated, patients are supposed to have been from the Almshouse.

APPENDIX H.

Diet List.

Meal.	Articles.	Penitentiary.	Alms-house.
Breakfast. {	Bread. {	10 oz. {	Daily ration, 20 oz.
	Rye coffee {	1½ pints {	1½ pints.
Dinner {	Fresh beef. {	1 lb. 5 days per week {	1 lb. 2 days per week.
	Salt beef {	¾ lb. 2 {	¾ lb. 1 day per week.
	Stew of salt pork with vegetables {	do {	
	Mutton stew {	do {	
	Bean soup with salt beef {	1½ pints 1 day per week {	1½ pints 1 day per week.
	Mush and molasses {	do {	1 day per week.
	Bread {	From daily ration {	From daily ration.
Supper {	Vinegar {	A small quantity issued to each person as required.	From daily ration.
	Soup of beef and vegetables {	1½ pints 5 days per week {	1½ pints 5 days per week.
	Mush {	Containing 3 to 4 oz. meal {	From daily ration.
	Bread {	do {	do {
	Rye coffee {	1½ pints {	1½ pints.
	Tea {	do {	do {

APPENDIX H—Continued.

Meal.	Articles.	Workhouse.	Lunatic asylum.
Breakfast {	Bread.....	10 oz.-----	Daily ration, 22 oz.
	Rye coffee.....	1½ pints-----	1½ pints.
Dinner {	Fresh beef.....	1 lb. 5 days per week	½ lb. 4 days per week.
	Salt beef.....	¾ lb. 2 do	1 day per week.
	Stew of salt pork with vegetables	-----	1 day per week.
	Mutton stew.....	1½ pints 1 day per week	1 day per week.
	Bean soup with salt beef.....	-----	From daily ration.
	Mush and molasses.....	8 oz.-----	each person as required
	Bread.....	A small quantity issued to	1½ pints 4 days per week.
Supper {	Vinegar.....	1½ pints 6 days per week	
	Soup of beef and vegetables.....	-----	
	Mush.....	1½ pints, cont'g 3 oz. meal,	From daily ration.
	Bread.....	-----	1½ pints.
	Rye coffee.....	-----	
	Tea.....	-----	

APPENDIX I.

Daily Meteorological Observations, with daily number of cases and deaths at each Institution, with totals.

DATE.	PREVAILING.		Humidity. 100°.	Mean Thermometer.	Mean Barometer.	Lunatic Asylum.		Work House.		Alms House.		Penitentiary.		Charity Hospital.		Total B. I.		Ward's Island (Grave diggers)	
	Wind.	Weather.				Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
July 9.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....
20.	N. E.	Light rain.	70	65	29.99	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	.....	.....	.....
21.	N. E. and S.	Cloudy.	63	74	29.84	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	.....	.....	.....
22.	N. W.	Clear.	42	78	29.74	1	1	1	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....
23.	S. W.	Variable.	36	78	29.91	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....
24.	S. W.	Variable.	58	75	29.94	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
25.	S. W.	Variable and sultry.	68	77	29.99	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....
26.	South.	Variable and sultry.	59	78	29.98	2	1	16	.....	.....	.....	.....	.....	.....	.....	4	.....	.....	.....
27.	South.	Cloudy.	70	78	29.84	2	2	12	8	.....	.....	.....	.....	.....	.....	12	.....	.....	.....
28.	South.	Clear and sultry.	59	77	29.77	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	6	.....	.....	.....
29.	South.	Variable.	58	78	29.80	1	1	11	3	4	1	.....	.....	.....	.....	17	.....	.....	.....
30.	S. W.	Variable.	42	76	29.90	2	1	12	3	10	7	1	.....	.....	.....	26	.....	.....	.....
31.	S. W.	Warm, rainy.	63	78	29.94	5	1	33	23	3	3	1	.....	.....	.....	29	.....	.....	.....
Aug. 1.	S. W.	Variable.	59	78	29.81	6	1	30	12	3	2	4	.....	.....	.....	45	.....	.....	.....
2.	West.	Clear, dry.	36	75	29.81	3	2	21	13	9	7	.....	.....	.....	.....	39	.....	.....	.....
3.	S. W.	Variable.	58	73	29.90	7	3	12	16	10	7	4	.....	.....	.....	36	.....	.....	.....
4.	S. W.	Clear, very dry.	85	71	29.91	1	.....	.....	.....	.....	.....	1	.....	.....	.....	37	.....	.....	.....
5.	S. W.	Variable.	55	72	29.92	6	7	4	5	7	8	.....	.....	.....	.....	17	.....	.....	.....
6.	S. W.	Variable.	42	72	29.97	4	.....	.....	.....	.....	.....	2	.....	.....	.....	16	.....	.....	.....
7.	S. W.	Variable.	55	73	29.91	3	2	2	6	5	3	.....	.....	.....	.....	17	.....	.....	.....
8.	N. E.	Rainy.	81	64	29.65	2	5	1	4	3	1	.....	.....	.....	.....	10	.....	.....	.....
9.	N. W.	Clear and very dry.	35	69	20.85	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	7	.....	.....	.....
10.	West.	Clear and very dry.	35	71	30.03	3	1	1	.....	.....	.....	.....	.....	.....	.....	10	.....	.....	.....
11.	S. W.	Clear and very dry.	50	73	30.10	1	3	3	3	2	3	.....	.....	.....	.....	9	.....	.....	.....
12.	S. W.	Clear and very dry.	50	73	30.05	2	2	5	4	5	5	.....	.....	.....	.....	9	.....	.....	.....
13.	N. E.	Rain.	85	67	30.05	3	.....	1	2	2	2	.....	.....	.....	.....	8	.....	.....	.....

APPENDIX I—Continued.

DATE.	PREVAILING.		Lunatic Asylum.		Work House.		Alms House.		Penitentiary.		Charity Hospital.		Total B. I.		Ward's Island (Grave diggers.)	
	Wind.	Weather.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Aug. 14..	East	Rainy.....	2	2	2	1	4	4	1	.....	2	2	11	9	.....	.....
15..	N. E.	Rainy .....	.....	2	.....	3	3	2	.....	.....	3	1	10	10	.....	.....
16..	North	Clear, very dry.....	6	2	1	2	3	.....	.....	1	.....	1	10	8	.....	.....
17..	S. W.	Clear, very dry.....	2	.....	.....	.....	1	1	.....	.....	.....	.....	6	3	.....	.....
18..	S. W.	Clear, very dry.....	1	4	.....	.....	1	3	.....	.....	2	3	4	10	.....	.....
19..	S. E.	Rainy	1	.....	.....	1	5	3	.....	.....	1	1	7	5	.....	.....
20..	N. W.	Mostly clear.....	2	.....	2	1	4	1	1	.....	.....	.....	9	2	.....	.....
21..	West	Mostly clear.....	.....	1	.....	.....	3	2	.....	.....	.....	.....	3	2	.....	.....
22..	South	Mostly clear.....	.....	3	.....	.....	2	1	.....	.....	1	1	3	5	.....	.....
23..	N. E.	Rainy	1	1	.....	.....	5	.....	.....	.....	.....	.....	6	4	.....	.....
24..	S. W.	Mostly clear.....	4	.....	.....	1	2	7	.....	.....	.....	.....	3	3	.....	.....
25..	S. W.	Cool and clear.....	.....	.....	.....	2	3	2	.....	.....	1	1	4	2	.....	.....
26..	S. W.	Windy and clear.....	1	2	.....	.....	3	2	.....	.....	1	1	2	4	.....	.....
27..	S. W.	Windy and clear.....	.....	.....	.....	.....	.....	1	1	.....	.....	1	2	3	.....	.....
28..	S. E.	Variable, damp.....	2	2	.....	.....	.....	.....	.....	.....	.....	.....	2	2	.....	.....
29..	N. E.	Variable, damp.....	1	1	.....	.....	.....	1	.....	.....	.....	.....	1	1	.....	.....
30..	West	Variable, damp.....	.....	.....	.....	.....	1	1	.....	.....	.....	.....	2	1	.....	.....
31..	S. E.	Variable, damp.....	2	1	.....	.....	.....	.....	.....	.....	.....	.....	1	1	.....	.....
Sept. 1..	S. E.	Cloudy, sultry.....	1	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....
2..	S. E.	Variable.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
3..	S. E.	Variable.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
4..	N. E.	Cloudy.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
5..	S. E.	Variable.....	2	1	.....	.....	.....	.....	.....	.....	.....	.....	2	1	.....	.....
6..	N. W. to S. E.	Clear .....	.....	1	.....	1	1	.....	.....	.....	.....	.....	2	1	.....	.....
7..	S. E.	Fog A. M., rain P. M.	1	.....	.....	.....	1	.....	.....	.....	.....	.....	1	.....	.....	.....
8..	S. W.	Variable.....	1	1	.....	1	.....	.....	.....	.....	.....	.....	2	.....	.....	.....
9..	West	Clear .....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	1	1	.....	.....
10..	S. W.	Fine	1	.....	.....	.....	1	.....	.....	.....	1	.....	3	.....	.....	.....

29.90	72	S. E.	Rainy.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
11..	72	S. W.	Clear	1	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3
29.80	76	West.	Fine	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
29.75	72	S. E.	Cloudy, rain P. M.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
30.00	70	N. W.	Fine.	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
28.10	57	West.	Fine.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
29.20	57	S. E.	Cloudy, damp	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
29.05	67	S. E.	Cloudy, damp	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
29.90	78	S. E.	Cloudy, damp	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
29.85	72	N. to S	Rainy.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
28.90	69	N. E	Rainy	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
29.85	70	East.	Rainy	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
29.85	70	N. W.	Rainy	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
30.01	60	N. W.	Clear	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
30.10	55	N. W	Clear	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
30.20	56	N. E.	Cloudy.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
30.10	67	East.	Clear, damp.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
28.90	72	S. E.	Rainy	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
30.04	50	N. W	Fine	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
30.14	66	East.	Fine	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
30.15	63	N. W	Cloudy.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
30.07	70	N. W	Variable	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total.....				98	72	204	149	111	90	19	7	50	42	482	360	13	69.23		
Percentage of deaths to total number of cases of cholera				73.47		73.0±		81.0S		36.84		84.00		74.68					

APPENDIX K.
Table showing Influence of Age upon Mortality.

AGES.	LUNATIC ASYLUM.				WORKHOUSE.				ALMSHOUSE.			
	Males.		Females.		Males.		Females.		Males.		Females.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Under 20-----	---	---	1	1	6	3	13	8	2	2	3	1
20 and under 30-----	4	4	13	11	17	12	53	36	4	3	15	12
30 and under 40-----	7	6	24	18	12	9	27	19	2	2	20	15
40 and under 50-----	5	3	18	11	17	12	22	18	2	1	12	10
50 and under 60-----	6	3	9	7	7	7	11	10	8	4	18	17
60 and under 70-----	2	2	6	5	10	9	4	3	5	4	9	9
70 and under 80-----	---	---	1	1	1	1	2	2	2	2	6	6
80 and upwards-----	---	---	---	---	---	---	---	---	1	---	2	2
Unknown -----	1	---	1	---	2	---	---	---	---	---	---	---
Total -----	25	18	73	54	72	53	132	96	26	18	85	72

APPENDIX K—Continued.

AGES.	PENITENTIARY.				CHARITY HOSPITAL.				TOTAL.			
	Males.		Females.		Males.		Females.		Males.		Females.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Under 20	1	—	1	—	—	—	2	1	9	5	20	11
20 and under 30	10	3	1	—	1	—	18	14	36	22	100	73
30 and under 40	3	3	—	—	5	4	4	4	29	24	75	56
40 and under 50	1	1	1	—	4	4	3	3	29	21	56	42
50 and under 60	—	—	—	—	5	4	2	2	26	18	40	36
60 and under 70	—	—	—	—	3	3	1	1	20	18	20	18
70 and under 80	—	—	—	—	—	—	1	1	3	3	10	10
80 and upwards	—	—	—	—	—	—	—	—	1	—	2	2
Unknown	1	—	—	—	—	—	1	1	4	—	2	1
Total	16	7	3	—	18	15	32	27	157	111	325	249

ABSTRACT OF THE RECORDS OF CHOLERA AND DIARRHOEAL DISEASES
AT THE MILITARY POSTS, AND QUARTERS FOR RECRUITS, ON
GOVERNOR'S ISLAND, HART'S ISLAND, DAVID'S ISLAND, AND OTHER
POSTS IN THE HARBOR OF NEW YORK.

By the courtesy of Major General J. K. Barnes, Surgeon-General U. S. A., the Metropolitan Board of Health has been furnished with the subjoined official records of cholera and its allied diarrhoeal diseases, during the epidemic period in the summer and autumn, 1866. These records have, by Surgeon Woodward's kindness, been so tabulated as to compare with all our records of diarrhoeal diseases in the epidemic. It appears by these records that there were one hundred and eighty-one decided cases of Asiatic cholera in these military quarters; that seventy-eight of them proved fatal; that there were eleven hundred and sixty-nine cases of acute diarrhoea, fifty of "cholera morbus," and forty-eight of dysentery and chronic diarrhoea; that only seven of the last named diseases proved fatal, and that the sum total of diarrhoeal diseases, including cholera, among all the soldiers and their officers was fourteen hundred and forty-eight, only eighty-five of whom died.

Thus it appears that at these posts, where seventeen hundred and twenty-one men, in comfortable military quarters, were exposed to the full force of the epidemic—for the cholera among them was particularly virulent—less than three hundred out of the whole number escaped diarrhoeal diseases. This record, with what we know from private sources concerning the management of these sick soldiers, affords new and convincing evidence of the value of that ceaseless vigilance by medical officers, which is seldom perfect excepting under military authority; such we know was the sanitary care of the choleraic diarrhoea, under Colonel J. B. Brown, Surgeon U. S. A., in the military quarters of the harbor of New York. We would also notice the fact, that cholera did not invade any one of the five military stations mentioned in the last paragraphs of Surgeon Woodward's report.

"SURGEON-GENERAL'S OFFICE, WASHINGTON CITY, }
January 11, 1867. }

"DR. E. HARRIS :

"SIR—In reply to your application for information with regard to the origin and progress of epidemic cholera at Hart's Island

and elsewhere in New York harbor last summer, I have the honor to transmit the enclosed report.

“Very respectfully your obedient servant,

“(Signed) J. J. WOODWARD,
“*Brevet-Major and Assistant-Surgeon U. S. A.*
“By order of the Surgeon-General.”

SURGEON-GENERAL'S OFFICE, }
WASHINGTON CITY, D. C., *January 10, 1867.* }

Brevet Maj. Gen. J. K. BARNES,

Surgeon-General U. S. Army :

General—In accordance with your instructions, I have compiled from the official reports, the following statement with regard to the epidemic of cholera among the troops in New York harbor, last summer.

It appears from the report of Brevet Col. J. B. Brown, Surgeon U. S. A., that the first case of cholera appeared at Fort Columbus, Governor's Island, on the evening of the 3d of July. Col. Brown says: “This man had been but three days at the post, and came direct from the recruiting rendezvous at Minneapolis, Minn.; nothing of his previous history could be learned.” About an hour after the admission of this man into the hospital, another case occurred, the patient being a recruit of Company “D.” Col. Brown says: “No connection could be traced between these cases.”

Shortly after the outbreak of cholera on Governor's Island, it appeared among the troops on Hart's Island. The first case occurred on the 8th of July, and during this day and the 9th, there were five cases, and three deaths. Brevet Maj. George M. McGill, Assistant Surgeon U. S. A., in the remarks appended to his monthly report of sick and wounded, states that the infection “reached Hart's Island without influencing intermediate posts, such as Willett's Point and Fort Schuyler, in the system of recruits sent from Governor's Island.”

On the 20th of July, troops from Hart's Island were transferred to David's island, and the same night several cases of cholera occurred in the new quarter, among the troops thus transferred. Previously there had been no cholera on David's island.

The cholera cases on Governor's island, Hart's island and David's island, were the only ones reported among the troops in New York harbor during the summer, with the exception of a single

case reported at Fort Schuyler during the month of July : this case did not prove fatal.

Appended is a series of tables giving the number of cases and deaths from cholera, cholera morbus and diarrhœal diseases monthly, for the five months from July to November inclusive, at each of the above mentioned stations, with a summary for the whole.

The reports from forts Hamilton and Lafayette, fort Wadsworth, fort at Sandy Hook, Madison barracks and Willett's Point, show that no cholera cases occurred at these posts. Moreover, Bvt. Lieut. Col. J. F. Hammond, Surgeon U. S. A., reports September 25th, that out of about three hundred and twenty-five officers and men on detached duty in New York, Williamsburgh, and Jersey city, no cases of cholera occurred, though there was much diarrhœa.

The appended statistical tables show that out of an average mean strength of 1,721 men, at the posts where cholera cases were reported, there were 181 cases, and 78 deaths of cholera ; with 1,267 cases and seven deaths of cholera morbus, diarrhœa and dysentery.

I have the honor to be, General,

Very respectfully,

Your obedient servant,

J. J. WOODWARD,

Bvt. Maj. and Asst. Surgeon, U. S. A.

Report of cases of Cholera, Cholera Morbus, Diarrhoea and Dysentery, at Fort Columbus, Governor's Island, New York Harbor, from July 1 to November 30, 1866.

MONTH	JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		Total for the five months.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		
MEAN STRENGTH.....	1,013		1,152		1,268		1,046		866		1,069	
Cholera	92	25	25	13			6	3			123	41
Cholera morbus			10		4		3				17	
Acute diarrhoea	297		245		110		111		26		789	
Chronic diarrhoea							4				4	
Acute dysentery			19		2		3		2		26	
Chronic dysentery	3	1	6	4	1		1	1			11	6
Total.....	392	26	305	17	117		128	4	28		970	47

Report of cases of Cholera, Cholera Morbus, Diarrhoea and Dysentery, at Hart's Island, New York Harbor, from July 1 to November 30, 1866.

MONTH	JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		Total for the five months.
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	
MEAN STRENGTH.....	510		.....		.....		.....		.....		510.
Cholera	39	30	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cholera morbus	8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Acute diarrhoea	203	.....	.....	.....	.....	.....	.....	.....	203	.....	.....
Chronic diarrhoea .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Acute dysentery	1	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
Chronic dysentery .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total.....	251	30	.....	.....	.....	.....	.....	.....	251	.....	30

Report of cases of Cholera, Cholera Morbus, Diarrhoea and Dysentery, at De Camp General Hospital, David's Island, New York Harbor, from July 1 to November 30, 1866.

MONTH	JULY.	AUGUST.	SEPTEMBER.	OCTOBER.	NOVEMBER.	Total for the five months.
MEAN STRENGTH.....	.....	.....	.....	.....	.....	.....
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Cholera	11	7	2	—	1	18
Cholera morbus	4	—	1	—	—	24
Acute diarrhoea	58	—	6	1	6	144
Chronic diarrhoea	—	—	—	—	3	3
Acute dysentery	1	—	—	—	—	1
Chronic dysentery	—	—	—	—	—	—
Total.....	74	7	9	1	10	990
						8

Report of cases of Cholera, Cholera Morbus, Diarrhœa and Dysentery, at Fort Schuyler, New York Harbor, from July 1 to November 30, 1866.

MONTH.....	JULY.		AUGUST.		SEPTEMBER,		OCTOBER.		NOVEMBER.		Total for the five months.
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	
MEAN STRENGTH.....	121		133		133		126		197		142
Cholera	1	—	—	—	—	—	—	—	—	—	—
Cholera morbus	1	—	—	—	—	—	—	—	1	—	—
Acute diarrhœa	8	—	12	—	10	—	1	—	2	—	—
Chronic diarrhœa	—	—	—	—	—	—	—	—	—	—	—
Acute dysentery	—	—	2	—	—	—	—	—	—	—	—
Chronic dysentery	—	—	—	—	—	—	—	—	—	—	—
Total	10	—	14	—	10	—	1	—	2	—	37

Records of Cholera in the Idiot House, Nursery Hospital, and House of Refuge, Randall's Island. Under the care of the Commissioners of Public Charities and Correction.

		New cases.	Deaths.
IDIOT HOUSES:			
July	29.....	1	1
	30.....	2	2
	31.....	2	2
Aug.	1.....	8	4
	2.....	3	2
	3.....	1	1
	5.....	2	1
	8.....	1	1
	12.....	1	--
	14.....	1	1
	15.....	1	--
Total		23	15

NURSERY HOSPITAL:			
July	29.....	3	2
	30.....	6	3
	31.....	4	1
Aug.	1.....	7	--
	2.....	2	--
	3.....	2	1
	9.....	1	--
	10.....	1	--
	11.....	1	--
	12.....	1	--
	14.....	1	1
	19.....	1	1
	25.....	1	1
Total		31	10

HOUSE OF REFUGE:			
Aug.	1.....	1	1
	2.....	2	--
	3.....	4	--
	5.....	5	--
	8.....	4	--

HOUSE OF REFUGE:		New cases.	Deaths.
Aug. 9	.....	2	..
15	.....	2	1
22	.....	1	..
		—	—
Total	.....	21	2
		==	==
Grand total	.....	75	27
		==	==

Cholera as it prevailed in Emigrant Refuge and Hospital, Ward's Island. Under the care of the Commissioners of Emigration.

EMIGRANT REFUGE AND HOSPITAL:		New cases.	Deaths.
July 19	.....	2	1
20	.....	1	..
21	.....	9	4
22	.....	2	3
23	.....	3	..
24	.....	2	1
26	.....	4	2
27	.....	2	3
28	.....	5	5
29	.....	34	10
30	.....	17	14
31	.....	12	10
Aug. 1	.....	16	11
2	.....	18	12
3	.....	22	8
4	.....	9	8
5	.....	5	9
6	.....	3	10
7	.....	3	4
8	.....	..	1
9	.....	2	1
10	.....	4	4
11	.....	4	5
12	.....	4	5
13	.....	..	4
14	.....	2	1

EMIGRANT REFUGE AND HOSPITAL:		New cases.	Deaths.
Aug. 16	.....	2	1
17	.....	..	2
18	.....	1	1
19	.....	1	2
20	.....	..	1
21	.....	1	..
23	.....	..	1
26	.....	3	2
28	.....	..	1
30	.....	1	1
31	.....	1	..
Sept. 2	.....	..	1
5	.....	..	1
7	.....	1	..
8	.....	2	2
10	.....	1	..
15	.....	1	..
17	.....	1	..
Total	.....	<u>201</u>	<u>152</u>

“D.”

OFFICE OF DEPUTY REGISTRAR OF VITAL STATISTICS, }
BROOKLYN, Nov. 15, 1866. }

TO DR. E. HARRIS,

Registrar of Vital Statistics, Metropolitan Board of Health.

Until the appointment of the Metropolitan Board of Health, no public record was kept of births and marriages in the city of Brooklyn, and no regular report on the sanitary condition of the city has hitherto been published. A mortuary record has, however, been kept without interruption since January, 1848, which was commenced in anticipation of an epidemic of cholera. This record was turned over to the Bureau of Vital Statistics, when it assumed the charge of registration.

To you, sir, is due the entire plan of registration throughout the Metropolitan district; the forms of certificates and of permits, of periodical reports and of the following tabulations, are copies of those in use in the New York Bureau, and are enforced by the same authority.

In the following report the materials are presented as far as they have accumulated; they are not yet sufficiently abundant, nor has time been afforded for their profitable elaboration. The prevailing currents of disease were this year modified by the introduction of a pestilential element, that of Asiatic cholera, and it is with reference to this influence that the statistics of mortality since the establishment of this Bureau are chiefly valuable.

The city of Brooklyn contained, according to the census of 1865, 296,112 inhabitants. These are distributed through twenty wards, as follows:

Table showing the population of the city of Brooklyn, by Wards and Nationalities.

NUMBER OF WARD.	Population.	No. of square yards to each person.	Native population.	Irish.	German.	English.	Other nationalities.
First	6,128	64	3,593	1,835	284	231	185
Second	8,760	46	4,500	2,890	326	658	386
Third	8,890	69	5,924	1,751	414	423	378
Fourth	11,506	43	7,915	1,878	477	850	386
Fifth	17,820	29	10,106	5,658	576	864	616
Sixth	26,407	49	14,947	7,717	1,529	1,117	1,097
Seventh	15,968	140	11,023	3,104	466	939	436
Eighth	9,829	985	6,051	1,038	610	789	441
Ninth	23,443	605	15,885	3,102	2,203	1,453	800
Tenth	28,668	77	17,966	6,121	1,917	1,506	1,158
Eleventh	18,242	47	12,608	3,462	656	954	562
Twelfth	13,085	82	6,373	4,914	976	462	363
Thirteenth	17,791	55	13,113	1,753	1,276	1,039	610
Fourteenth	15,425	76	9,412	3,770	1,011	854	378
Fifteenth	11,449	83	8,173	1,024	1,376	618	258
Sixteenth	24,397	32	13,078	835	9,387	429	650
Seventeenth	10,234	334	6,801	1,828	695	512	398
Eighteenth	6,053	1,413	4,117	674	1,085	244	33
Nineteenth	8,055	167	5,507	961	847	358	382
Twentieth	13,980	99	16,480	1,928	356	698	518
Total	296,112	-----	187,589	57,143	26,467	14,998	9,915



DIAGRAM SHOWING THE RANGE OF TOTAL MORTALITY AND THE COURSE OF CHOLERA;
DIARRHŒA, AND THE ZYMOTIC CAUSES OF DEATH IN BROOKLYN. 1866.



DIAGRAM SHOWING THE RANGE OF TOTAL MORTALITY AND THE COURSE OF CHOLERA, DIARRHOEA, AND THE ZYMOTIC CAUSES OF DEATH IN BROOKLYN. 1866.

The Eighth, Ninth and Eighteenth wards, which form the boundary of the city on the land side, are separated from the open country by no natural barriers, and are thinly inhabited; abundant room is, therefore, afforded for expansion, an advantage of the first importance in a sanitary point of view.

The wards which lie on the East river are, beginning at the southern extremity of the city, the Eighth, Sixth, First, Second, Fifth, Nineteenth, Thirteenth, Fourteenth and Seventeenth, with a water front of about nine miles. Newton creek forms the north-eastern boundary of the Seventeenth, and a part of the Eighteenth, for a distance of three miles. The boundary line of the Ninth ward is marked by the summit of a range of hills four miles inland. The southwestern angle of the city consists of a narrow strip along the shore of New York harbor. A large portion of the territory of the Eighth, Twelfth, Seventeenth and Eighteenth wards on the outskirts of the city is covered with swamps, or intersected by canals and creeks; swamp-land exists also in the vicinity of the Navy Yard, and extends through the Nineteenth and Sixteenth wards, to join that of the Eighteenth, just mentioned; the remainder, and by far the largest portion of the city, lies on hills of drift, affording excellent drainage.

The following table shows the mortality of each ward of the city for the past six months:

Table showing the total mortality by wards of the city of Brooklyn, from the 28th of April to the 27th of October, 1866.

Number of ward.	Total mortality.	Mortality per 1,000.
First	83	13 per 1,000
Second	172	19 do
Third	91	10 do
Fourth	169	14 do
Fifth	328	18 do
Sixth	434	16 do
Seventh	179	11 do
Eighth	251	25 do
Ninth	378	16 do
Tenth	433	15 do
Eleventh	359	19 do
Twelfth	582	44 do
Thirteenth	189	16 do
Fourteenth	279	18 do

Fifteenth	141	12 per 1,000
Sixteenth	470	19 do
Seventeenth	148	14 do
Eighteenth	86	14 do
Nineteenth	114	14 do
Twentieth.....	175	12 do

Average 16.9 per 1,000 of population in six months.

The foregoing table shows that the wards in which the mortality was over the average of 16.9 per 1,000, were the Second, Fifth, Eighth, Eleventh, Twelfth, Fourteenth and Sixteenth. It is not difficult to trace this excessive mortality to amply adequate causes. It is found in those localities where wretched dwellings, tenanted by the most destitute and degraded of our foreign population, occupy tracts of land hardly rescued from the tide, or forming for the greater part of the year continuous swamps. Of this the Twelfth ward with a mortality of forty-four per one thousand, and the Eighth with a mortality of twenty-five per one thousand, afford notable examples.

The mortality in the third quarter of the present year was greater than that of the first two quarters, as may be seen by the following table:

Return of Marriages, Births and Deaths in the city of Brooklyn, by months and quarters.

	Marriages.	Births.	Deaths.	Still-births.	Remarks.
January	-----	-----	547	43	No return of births was made in the city of Brooklyn prior to April, 1866. No returns of marriages was made in the city of Brooklyn until May, 1866.
February	-----	-----	477	38	
March	-----	-----	611	42	
First quarter	-----	-----	1,635	123	
April	-----	49	548	50	
May	50	341	550	49	
June	109	378	487	47	
Second quarter	-----	-----	1,585	146	
July	100	377	1,268	59	
August	88	433	1,338	58	
September	111	413	851	45	
Third quarter	299	1,223	3,457	162	
Total	458	1,991	6,677	431	

In the months of July, August and September there were three thousand four hundred and fifty-seven deaths in the city alone—for the first six months there were three thousand two hundred and twenty deaths. Of the first number but five hundred and thirty were from cholera, of which two hundred and twenty-two were from the Twelfth ward alone, leaving a vast excess of mortality to be traced to other causes. If we compare the mortality of adults with that of children for this period, a vast excess will be found of the latter over the former:

Table showing the Comparative Mortality of Adults and Children, in weekly periods, for the third quarter of 1866.

	Adults.	Children.
For the week ending July 7.....	54	126
For the week ending July 14.....	85	211
For the week ending July 21.....	140	279
For the week ending July 28.....	100	204
For the week ending August 4.....	154	188
For the week ending August 11.....	164	214
For the week ending August 18.....	167	181
For the week ending August 25.....	106	165
For the week ending September 1.....	87	168
For the week ending September 8.....	93	157
For the week ending September 15.....	80	149
For the week ending September 22.....	94	114
For the week ending September 29.....	70	136
Total.....	1,394	2,292

If, however, cholera be excluded, the mortality of children will be to that of adults as 230 to 100. During the fortnight ending the 21st of July, when the maximum temperature rose to 102° Fahrenheit, and cases of sunstroke and exhaustion from heat were frequent, the adult mortality rose considerably above the average, but, with this exception, there was no marked excess that was not due to cholera. Children, therefore, were the principal sufferers from the sources of disease with which the season and the city were rife, and the slaughter of infants was the city's chief inhumanity and barbarity. Seven hundred and two deaths were due to cholera infantum alone within the period indicated; an equal number, assigned to diarrhoea and convulsions, was undoubtedly due to zymotic infection. The most minute details respecting

age, sex and nativity, will be found in the appended tables. The accompanying diagram will make more readily manifest the relations which the mortality from zymotic diseases, from cholera infantum, and diarrhœal diseases, and from cholera, bore to each other, and to the total mortality during the progress of the season.

After thorough preparation had been made for its advent on the part of the board of health, and after the community had been thoroughly aroused to the necessity of preparation; after numerous spurious cases had given rise to false alarms, and a few doubtful ones to much contention, the cholera made its appearance in the Twelfth ward on the 5th of July. The following table presents a summary of the fatal cases reported to the Central Bureau of Vital Statistics :

Table showing the mortality from cholera in the city of Brooklyn and Kings county, during the months of July, August and September, 1866.

July:	Males.	Females.
Under one year	---	---
From one to two years	2	1
From two to three years	---	1
From three to four years	---	2
From four to five years	1	3
From five to ten years	6	4
From ten to fifteen years	1	1
From fifteen to twenty years	2	1
From twenty to twenty-five years	4	2
From twenty-five to thirty years	8	5
From thirty to thirty-five years	5	9
From thirty-five to forty years	7	6
From forty to forty-five years	8	5
From forty-five to fifty years	8	4
From fifty to fifty-five years	4	3
From fifty-five to sixty years	3	1
From sixty to sixty-five years	---	---
From sixty-five to seventy years	2	2
From seventy to seventy-five years	---	---
From seventy-five to eighty years	1	---
From eighty to eighty-five years	---	---
From eighty-five to ninety years	---	---
From ninety to ninety-five years	---	---
Total	62	50

August:

Males. Females.

Under one year	-----	-----
From one to two years	1	1
From two to three years	5	2
From three to four years	3	3
From four to five years	-----	2
From five to ten years	9	8
From ten to fifteen years	7	6
From fifteen to twenty years	12	6
From twenty to twenty-five years	12	14
From twenty-five to thirty years	27	25
From thirty to thirty-five years	21	20
From thirty-five to forty years	31	22
From forty to forty-five years	16	22
From forty-five to fifty years	16	19
From fifty to fifty-five years	13	10
From fifty-five to sixty years	8	9
From sixty to sixty-five years	6	8
From sixty-five to seventy years	6	2
From seventy to seventy-five years	1	-----
From seventy-five to eighty years	2	2
From eighty to eighty-five years	-----	-----
From eighty-five to ninety years	-----	1
From ninety to ninety-five years	-----	1
Total	<u>196</u>	<u>182</u>

September:

Under one year	-----	-----
From one to two years	-----	2
From two to three years	1	-----
From three to four years	-----	1
From four to five years	1	-----
From five to ten years	5	2
From ten to fifteen years	2	1
From fifteen to twenty years	2	3
From twenty to twenty-five years	2	2
From twenty-five to thirty years	3	2
From thirty to thirty-five years	3	4
From thirty-five to forty years	4	7
From forty to forty-five years	3	3

	Males.	Females.
From forty-five to fifty years.....	3	4
From fifty to fifty-five years.....	2	1
From fifty-five to sixty years.....	2	----
From sixty to sixty-five years	5	1
From sixty-five to seventy years	5	2
From seventy to seventy-five years	----	2
From seventy-five to eighty years.....	----	2
From eighty to eighty-five years.....	----	----
From eighty-five to ninety years.....	----	1
From ninety to ninety-five years	----	----
Total.....	43	40
Grand total	573	

The five hundred and seventy-three cases were distributed throughout the district as follows:

	Cases.
In the First ward there were.....	4
In the Second ward there were.....	12
In the Third ward there were.....	2
In the Fourth ward there were	2
In the Fifth ward there were.....	22
In the Sixth ward there were	57
In the Seventh ward there were	6
In the Eighth ward there were	22
In the Ninth ward there were	63
In the Tenth ward there were	25
In the Eleventh ward there were	62
In the Twelfth ward there were	222
In the Thirteenth ward there were.....	----
In the Fourteenth ward there were	3
In the Fifteenth ward there was	1
In the Sixteenth ward there were.....	3
In the Seventeenth ward there were.....	7
In the Eighteenth ward there were	4
In the Nineteenth there was	1
In the Twentieth there were	10
Without the city there were	45

The nativity of those who died of cholera was as follows:

Of natives of Ireland there were	291
Of natives of the United States there were	164

Of natives of Germany there were.....	61
Of natives of England there were	31
Of natives of Canada there were	3
Of natives of Scotland there were	2
Of natives of Holland there were.....	2
Of natives of Denmark there were.....	2
Of natives of Norway there were.....	2
Of natives of Sweden there were	1
Of natives of Russia Finland.....	1
Of natives of Switzerland	2
	<hr/>
	562
	<hr/>

Of the remainder (eleven deaths) the nativity was unknown.

In 410 cases, including women and children, no occupation was returned. Of the remaining 163, ninety-five were laborers, six were carpenters, five blacksmiths, five sailors, four machinists, five carmen, three watchmen, three farmers, two washerwomen; no other occupation returned included more than one case.

Of three hundred and thirty cases only was the duration of the disease returned. Of these the duration

Of 10 was.....	6 hours or less.
Of 74 was	between 6 and 12 hours.
Of 40 was	between 12 and 18 hours.
Of 86 was	between 18 and 24 hours.
Of 26 was	between 24 and 36 hours.
Of 27 was	between 36 and 48 hours.
Of 22 was	between 2 and 3 days.
Of 17 was	between 3 and 4 days.
Of 7 was	between 4 and 5 days.
Of 21 was	between 6 days and over.

The large proportion which perished within twenty-four hours of seizure gives evidence that the virulence of the disease was not exceeded by that of previous epidemics. It is probable, also, from the speedy fatality of many cases returned as cholera morbus, from their occurrence in the midst of a choleraic atmosphere, and from the existence of evident motives for assigning to them this name, rather than that of cholera, that a large proportion of these cases should be included with the statistics of cholera; but as it is impossible to separate these cases, the statistics of the mortality

from cholera morbus are given as they were reported. The following table presents a summary of the mortality from cholera morbus similar to that given of cholera :

July:	Males.	Females.
Under one year	2	1
From one to two years	1	1
From two to three years	2	---
From three to four years	---	2
From four to five years	1	2
From five to ten years	5	2
From ten to fifteen years	1	---
From fifteen to twenty years	---	---
From twenty to twenty-five years	1	---
From twenty-five to thirty years	3	4
From thirty to thirty-five years	2	3
From thirty-five to forty years	7	4
From forty to forty-five years	---	4
From forty-five to fifty years	---	2
From fifty to fifty-five years	---	---
From fifty-five to sixty years	---	---
From sixty to sixty-five years	1	---
From sixty-five to seventy years	---	1
From seventy to seventy-five years	1	---
From seventy-five to eighty years	---	2
From eighty to eighty-five years	---	---
From eighty-five to ninety years	---	---
Total	<u>27</u>	<u>28</u>

August :

Under one year	1	2
From one to two years	1	---
From two to three years	2	1
From three to four years	3	---
From four to five years	---	2
From five to ten years	8	4
From ten to fifteen years	2	1
From fifteen to twenty years	1	---
From twenty to twenty-five years	1	1
From twenty-five to thirty years	2	4
From thirty to thirty-five years	1	3

	Males.	Females.
From thirty-five to forty years.....	2	2
From forty to forty-five years	7	1
From forty-five to fifty years	3	1
From fifty to fifty-five years.....	---	2
From fifty-five to sixty years	---	3
From sixty to sixty-five years	2	---
From sixty-five to seventy years	---	6
From seventy to seventy-five years.....	3	---
From seventy-five to eighty years	---	---
From eighty to eighty-five years.....	---	---
From eighty-five to ninety-years	---	---
Total.....	<u>39</u>	<u>33</u>

September :

Under one year	---	---
From one to two years	1	---
From two to three years.....	1	---
From three to four years	---	---
From four to five years.....	1	---
From five to ten years	1	3
From ten to fifteen years	---	---
From fifteen to twenty years	---	---
From twenty to twenty-five years	---	---
From twenty-five to thirty years	---	---
From thirty to thirty-five years.....	---	1
From thirty-five to forty years.....	---	1
From forty to forty-five years	---	3
From forty-five to fifty years.....	---	1
From fifty to fifty-five years.....	---	---
From fifty-five to sixty years	---	1
From sixty to sixty-five years	---	---
From sixty-five to seventy years	---	---
From seventy to seventy-five years	---	---
From seventy-five to eighty years	---	---
From eighty to eighty-five years	---	---
Eighty-five to ninety years.....	---	1
Total.....	<u>4</u>	<u>11</u>
Grand total	---	<u>142</u>

Of the one hundred and forty-two fatal cases of cholera morbus,

Sixty-two were natives of the.....	United States.
Fifty-three were natives of	Ireland.
Nineteen were natives of.....	Germany.
Five were natives of	England.
Two were natives of	Scotland.
One a native of.....	Sweden.

	Deaths.
In the First ward occurred.....	1
In the Second ward occurred.....	4
In the Third ward occurred.....	1
In the Fourth ward occurred.....	--
In the Fifth ward occurred	7
In the Sixth ward occurred	7
In the Seventh ward occurred.....	1
In the Eighth ward occurred	11
In the Ninth ward occurred	9
In the Tenth ward occurred.....	7
In the Eleventh ward occurred	6
In the Twelfth ward occurred	54
In the Thirteenth ward occurred.....	3
In the Fourteenth ward occurred.....	3
In the Fifteenth ward occurred	4
In the Sixteenth ward occurred.....	8
In the Seventeenth ward occurred.....	3
In the Eighteenth ward occurred	1
In the Nineteenth ward occurred.....	3
In the Twentieth ward occurred	1

Seven fatal cases without the limits of the city.

Six cases proved fatal within	12 hours.
Seven cases proved fatal within.....	18 hours.
Nineteen cases proved fatal within.....	24 hours.
Thirteen cases proved fatal within.....	48 hours.
Eleven cases proved fatal within.....	3 days.
Twelve cases proved fatal within.....	4 days.
Ten cases proved fatal within.....	5 days.
Ten cases lasted over.....	1 week.

Total number of cases, eighty-eight.

Of the remaining fifty-four the duration of the disease was not returned.

In twenty-six cases of adult males the occupation was returned. With the exception of nine laborers and three carpenters no occupation returned included more than one victim.

The most prominent fact which the record makes manifest is, that outside of the Twelfth ward and the adjacent portion of the Sixth, and of the public institutions, the pestilential influence of the cholera miasm was altogether insignificant. In the Twelfth and Sixth wards the mortality from cholera and cholera morbus reached three hundred and forty; the seventy-two deaths which occurred in the Ninth ward belong mainly to the penitentiary, which is included within the boundaries of this ward. In the Eleventh ward the jail contributed largely to the mortality, and the cholera hospital received cases belonging to other wards, but the deaths amounted to sixty-eight only. Next in order of mortality stands the Tenth, in which there were thirty-two deaths, the Eighth, in which there were thirty-three, the Fifth with twenty-nine, and the Second with but sixteen. The fifty-two deaths which occurred without the limits of the city belong mainly to the public institutions at Flatbush. Thus only on the most luxuriant soil, luxuriant in filth and moisture, did the germs of the pestilence thrive, or escape the measures of repression with which they were attacked.

One of the most important occurrences in the history of the recent epidemic is the sudden and overwhelming outbreaks at the penitentiary, an account of which is contained in the report of the Assistant Sanitary Superintendent. The building occupies the summit of a hill, is noted for its cleanliness and excellent ventilation, and every precaution that intelligence could devise had been taken to secure its healthfulness; but the plains at the base of that hill and other hills of the range were largely occupied with stagnant pools, cow-stables and pig-yards, and on the night of the outbreak, which was hot and damp, there was scarcely breeze enough to lift the poisonous vapors which overflowed the plain and permeated the building on the brow of the hill. In these vapors were the germs of the pestilence.

The mortality of the county institutions at Flatbush was small in comparison with that which occurred during the epidemic of 1854. Since then the cesspool, or rather, lake, which received the drainage of the buildings to which the mortality from cholera was at that time attributed, has been removed to a much greater

distance; careful disinfection may also come in for a share of influence in securing the immunity.

The excess of mortality among our foreign population is not due merely to the fact that it abounds in those localities where the germs of cholera flourish most luxuriantly, but also to a susceptibility which constitutions unacclimated and intolerant of our extremes of temperature, offer to the inroads of the pestilence.

The returns of births and marriages given in the appended tables will be found altogether inadequate. No legislation has yet proved effective in securing thorough exactitude in these returns, and the novelty of the requisition upon this community is an excuse for the evident incompleteness of those now presented. The prompt enforcement of the penalties which the law provides, in cases of neglect which come to the knowledge of the Bureau, would prove a valuable reminder to all delinquents.

The quarterly tables of deaths from all diseases include the mortality of the county institutions at Flatbush, their inmates being taken from the city, almost exclusively.

Respectfully,

R. CRESSON STILES, M. D.,
Deputy Registrar of Vital Statistics.

Return of Deaths for the three months ending March 31, 1866, for the city of Brooklyn alone.

Month.	Males.	Females.	Not stated.	Total.
January	291	256	----	547
February	252	225	----	477
March	323	288	----	611
Total	<u>866</u>	<u>769</u>	<u>----</u>	<u>1,635</u>

Month.	United States.	Foreign.	Not stated.	Total.
January	420	126	1	547
February	330	145	2	477
March	474	121	6	611
Total	<u>1,224</u>	<u>402</u>	<u>9</u>	<u>1,635</u>

	January.	February.	March.
Under one year	146	114	146
From one to two years	59	55	70
From two to three years	42	30	36

	January.	February.	March.
From three to four years.....	14	18	23
From four to five years.....	20	8	16
From five to ten years.....	18	22	29
From ten to fifteen years.....	8	7	9
From fifteen to twenty years.....	20	10	13
From twenty to twenty-five years.....	16	19	33
From twenty-five to thirty years.....	24	24	26
From thirty to thirty-five years.....	22	26	31
From thirty-five to forty years.....	24	19	27
From forty to forty-five years.....	28	18	28
From forty-five to fifty years.....	20	17	15
From fifty to fifty-five years.....	11	18	21
From fifty-five to sixty years.....	7	18	19
From sixty to sixty-five years.....	21	10	18
From sixty-five to seventy years.....	18	9	8
From seventy to seventy-five years.....	5	7	8
From seventy-five to eighty years.....	7	11	15
From eighty to eighty-five years.....	9	6	9
From eighty-five to ninety years.....	5	4	6
From ninety to ninety-five years.....	1	----	----
From ninety-five to one hundred years.....	----	----	1
Not stated.....	2	7	4
Total.....	547	477	611
Grand total.....			1,635

Return of Deaths for the three months ending June 30, 1866, for the city of Brooklyn alone.

Month.	Males.	Females.	Not stated.	Total.
April.....	319	229	----	548
May.....	303	247	----	550
June.....	261	226	----	487
Total.....	883	702	----	1,585

Month.	United States.	Foreign.	Not stated.	Total.
April.....	391	153	4	548
May.....	372	174	4	550
June.....	338	141	8	487
Total.....	1,101	468	16	1,585

	April.	May.	June.
Under one year.....	130	120	151
From one to two years.....	63	45	43
From two to three years.....	28	35	27
From three to four years.....	15	17	12
From four to five years.....	21	15	11
From five to ten years.....	28	28	23
From ten to fifteen years.....	9	7	12
From fifteen to twenty years.....	13	20	9
From twenty to twenty-five years.....	20	18	23
From twenty-five to thirty years.....	23	22	15
From thirty to thirty-five years.....	18	23	26
From thirty-five to forty years.....	29	23	27
From forty to forty-five years.....	18	22	18
From forty-five to fifty years.....	34	21	17
From fifty to fifty-five years.....	14	16	12
From fifty-five to sixty years.....	13	26	19
From sixty to sixty-five years.....	21	20	10
From sixty-five to seventy years.....	15	18	9
From seventy to seventy-five years.....	6	14	6
From seventy-five to eighty years.....	12	11	6
From eighty to eighty-five years.....	9	11	6
From eighty-five to ninety years.....	3	9	1
From ninety to ninety-five years.....	1	2	1
From ninety-five to one hundred years.....	----	----	----
From one hundred to one hundred and ten.....	----	1	----
Not stated.....	5	6	3
Total.....	548	550	487
Grand total.....			1,585

*Return of Deaths for the three months ending September 30, 1866,
for the city of Brooklyn alone.*

Month.	Males.	Females.	Not stated.	Total.
July.....	666	602	----	1,268
August.....	702	636	----	1,338
September.....	421	430	----	851
Total.....	1,789	1,668	----	3,457

Month.	United States.	Foreign.	Not stated.	Total.
July	912	342	14	1,268
August	850	474	14	1,338
September	641	207	3	851
Total	<u>2,403</u>	<u>1,023</u>	<u>31</u>	<u>3,457</u>

	July.	August.	Sept.
Under one year.....	529	367	279
From one to two years.....	164	159	156
From two to three years.....	45	60	27
From three to four years.....	21	22	18
From four to five years.....	20	16	12
From five to ten years.....	40	64	34
From ten to fifteen years.....	14	29	12
From fifteen to twenty years.....	25	44	26
From twenty to twenty-five years.....	31	49	25
From twenty-five to thirty years.....	57	87	31
From thirty to thirty-five years.....	50	58	34
From thirty-five to forty years.....	58	79	28
From forty to forty-five years.....	43	60	32
From forty-five to fifty years.....	40	63	23
From fifty to fifty-five years.....	36	50	23
From fifty-five to sixty years.....	26	33	15
From sixty to sixty-five years.....	18	27	14
From sixty-five to seventy years.....	15	28	26
From seventy to seventy-five years.....	9	10	11
From seventy-five to eighty years.....	9	12	8
From eighty to eighty-five years.....	5	6	6
From eighty-five to ninety years.....	4	4	4
From ninety to ninety-five years.....	3	1	2
From ninety-five to one hundred years.....	---	---	1
From one hundred to one hundred and ten years	1	---	1
Not stated	5	10	3
Total	<u>1,268</u>	<u>1,338</u>	<u>851</u>
Grand total	<u><u>1,268</u></u>	<u><u>1,338</u></u>	<u><u>851</u></u>
			<u><u>3,457</u></u>

Mortality, by weeks, in the city of Brooklyn and certain townships of Kings county, with ages, from April 21 to December 1, 1866.

WEEKS ENDING.	Deaths by weeks.	UNDER 20 YEARS OF AGE.							AGES.			
		1-2.	2-3.	3-4.	4-5.	5-10.	10-15.	15-20.	20 under 40.	40 under 60.	60 under 80.	80 and upwards.
		Under 1 year.										Unknown.
April 28	142	34	2	9	7	6	6	5	29	19	11	4
May 5	125	27	8	11	4	7	1	2	22	17	16	3
May 12	142	32	8	8	6	12	1	7	23	23	11	6
May 19	164	33	14	7	4	4	4	5	30	19	30	8
May 26	128	27	13	7	6	5	1	5	21	26	11	3
June 2	115	27	9	12	1	5	---	3	19	23	11	4
June 9	109	23	9	6	4	3	6	2	19	20	10	2
June 16	106	24	5	5	5	5	3	2	26	16	9	3
June 23	94	34	15	6	1	3	1	---	13	15	4	1
June 30	183	73	12	9	4	9	2	4	34	19	9	4
July 7	180	69	29	8	4	7	1	5	22	16	11	4
July 14	296	142	40	9	2	5	1	6	44	31	9	2
July 21	419	185	50	14	6	10	5	7	68	49	19	4
July 28	305	124	33	5	6	15	5	9	50	39	9	2
August 4	342	99	35	14	2	18	6	6	78	52	23	3
August 11	378	112	33	20	3	18	8	12	69	65	23	5
August 18	348	87	43	14	3	15	7	5	88	57	23	1
August 25	271	71	43	14	7	11	5	12	46	39	19	2

Mortality, by weeks, in the city of Brooklyn, &c.—Continued.

WEEKS ENDING.	Deaths by wards.	UNDER 20 YEARS OF AGE.								AGES.				80 and up-wards.	Unknown
		Under 1 year.	1-2.	2-3.	3-4.	4-5.	5-10.	10-15.	15-20.	20 under 40	40 under 60	60 under 80	80 and up-wards.		
September 1.....	255	93	33	9	4	3	13	5	7	39	26	19	4	---	---
September 8.....	250	76	55	3	2	2	4	3	12	36	24	30	3	---	---
September 15.....	229	73	37	9	5	2	12	6	6	39	28	12	---	---	---
September 22.....	208	64	25	5	4	-2	7	4	4	38	30	21	4	---	---
September 29.....	206	58	40	7	5	7	13	---	6	31	22	11	6	---	---
October 6.....	203	56	39	9	6	2	8	4	5	30	29	12	3	---	---
October 13.....	177	58	19	7	7	1	8	4	4	31	21	13	4	---	---
October 20.....	166	46	27	9	2	1	8	2	5	30	22	12	2	---	---
October 27.....	161	38	29	5	2	3	7	2	5	32	22	12	4	---	---
November 3.....	163	49	15	10	---	---	6	5	2	29	24	14	3	---	---
November 10.....	180	52	20	10	3	3	11	3	3	28	23	23	1	---	---
November 17.....	155	33	16	10	4	2	9	7	3	31	19	19	2	---	---
November 24.....	147	39	13	6	4	2	6	3	4	23	30	13	4	---	---
December 1.....	146	36	12	7	5	5	14	2	2	27	17	17	2	---	---

Table showing deaths from zymotic diseases; also population by wards, deaths by accident and negligence, and the percentage of zymotic deaths to the total mortality in the city of Brooklyn, during the quarter ending June 30th, 1866.

WARDS.	Small-pox.	Measles.	Scarlatina.	Diphtheria.	Croup.	Whooping-cough.	Typhus fever.	Typhoid fever.	Cholera Asiatic.	Cholera infantum.	Diarrhoea, dysentery and cholera morbus.	Other zymotic diseases.	Total deaths from zymotic diseases.	Deaths by accident or negligence.	Total deaths from all causes.	Percentage of zymotic deaths on total mortality.	Total population in wards (Census of 1865.
First		1	1	1				2		1	1		7	2	41	17.0	6,128
Second		3	1	3	2					1			12	1	60	20.0	8,760
Third		2	2							1			5	2	28	18.7	8,890
Fourth		1	3							3			9	1	73	12.0	11,506
Fifth		3	8		3			6					23	6	107	21.0	17,920
Sixth		2	4	1								2	19	6	140	13.5	26,407
Seventh		1	1		1	2		5		2	1	2	12	2	62	19.0	15,968
Eighth		5	4	6	1			2		1			20	2	65	30.0	9,829
Ninth		1	7	5	3	2	2	5		1	6	3	35	2	130	26.9	23,443
Tenth		2	7	4		1		4		2	9	4	30	3	141	21.0	28,668
Eleventh		11	3		2		1	2		4	2	2	16	3	127	12.5	18,242
Twelfth		1			3			3		4	1	3	24	6	92	26.0	13,085
Thirteenth		1		5	2		1	2		3		3	16	3	63	25.0	17,791
Fourteenth			4	4	1		2	4			3	3	21	7	97	21.5	15,425
Fifteenth					1			1				4	8		49	16.0	11,449
Sixteenth	1	1	2	8	2	1	1	3		6	4	2	31	4	169	18.0	24,379
Seventeenth			4			1		2				1	8	3	44	18.0	10,934
Eighteenth				1	1							1	3		27	11.0	6,053
Nineteenth				1	1					3	1	1	7	2	41	17.0	8,055
Twentieth		3	4	2	1					1		3	14		73	19.0	13,980
Total	1	37	55	41	24	7	8	43		33	38	33	320	54	1,629	19.6	206,112

Table showing deaths from zymotic diseases; also population by wards, deaths by accidents and negligence, and the percentage of zymotic deaths to the total mortality in the city of Brooklyn, during the quarter ending September 30th, 1866.

WARDS.	Small-pox.	Measles.	Scarlatina.	Diphtheria.	Croup.	Whooping-cough.	Typhus fever.	Typhoid fever.	Cholera Asiatic.	Cholera infantum.	Diarrhoea, dysentery and cholera morbus.	Other zymotic diseases.	Total deaths from zymotic diseases.	Deaths by accident or negligence.	Total deaths from all causes.	Percentage of zymotic deaths on total mortality.	Total population in wards (census of 1865).
First.....	1	2	.....	2	5	6	5	3	27	3	48	56.0	6,128
Second.....	1	1	1	.....	.....	.....	1	13	18	12	5	52	2	95	54.8	8,760
Third.....	1	.....	.....	.....	3	2	12	10	2	30	1	63	47.5	8,890
Fourth.....	2	.....	2	2	15	11	1	34	1	99	34.0	11,566
Fifth.....	2	2	7	1	2	.....	7	20	46	19	11	117	1	231	50.6	17,820
Sixth.....	1	1	2	1	1	.....	4	59	59	28	13	169	4	302	55.9	25,407
Seventh.....	1	1	.....	.....	.....	2	8	28	11	3	53	2	115	46.0	15,968
Eighth.....	1	9	1	3	.....	.....	1	20	49	13	12	109	6	173	63.0	9,829
Ninth.....	1	3	3	3	1	.....	4	55	58	26	16	170	7	294	57.8	23,443
Tenth.....	4	1	.....	.....	3	24	50	38	7	147	1	292	50.0	28,668
Eleventh.....	1	1	1	1	.....	3	58	28	12	7	112	5	221	50.0	18,212
Twelfth.....	1	1	2	.....	.....	4	224	77	29	48	385	6	504	76.0	13,085
Thirteenth.....	2	1	1	.....	1	5	1	39	15	3	68	2	222	54.9	17,791
Fourteenth.....	1	3	.....	.....	2	.....	7	3	49	19	4	88	3	189	41.0	15,435
Fifteenth.....	2	.....	.....	17	7	39	1	87	43.6	11,449
Sixteenth.....	3	6	1	.....	.....	4	2	76	40	8	140	3	306	45.7	24,379
Seventeenth.....	3	.....	1	.....	.....	2	6	19	12	6	49	.....	95	51.5	10,234
Eighteenth.....	1	1	.....	2	.....	.....	5	11	6	2	28	2	52	53.8	6,033
Nineteenth.....	2	1	18	6	3	30	1	69	42.0	8,035
Twentieth.....	2	3	.....	1	1	3	9	19	11	2	51	2	101	50.0	13,950
Total.....	7	32	33	16	14	2	61	517	717	336	163	1,898	53	3,458	54.8	296,112

MALES.

CAUSES OF DEATH.	Under 1 year of age.												
	1-	2-	3-	4-	5-	10-	15-	20-	25-	30-	35-	40-	45-
CLASS I.—Zymotic.													
Order 1. (Miasmatic Diseases.)													
Small-pox	1												
Measles	1	4		2	1								
Scarlatina	4	7	5	10	7								
Diphtheria	7	4	9	4	6		1	1		1			
Quinsy (tonsillitis, &c.)	1												
Croup (pseudo membranous)	4	4	5	4	2								
Whooping-cough	4	1		1									
Typhus fever		1		1			1	2				1	1
Typhoid fever	2				6	1	3	10	4	8	2	3	4
Erysipelas	2				1					1			1
Carbuncle					1								
Dysentery (acute)	26	4	2	2	9		2	2	3				1
Diarrhoea (acute)	54	3		2	1		1	2	1		1		3
Diarrhoea (chronic)	3			2			3		1		1	1	
Cholera, Asiatica		8	2	2	17	8	16	17	36	28	43	23	26
Cholera infantum	285	17	2										
Cholera morbus	3	5	3	2	14	4	1	2	5	3	7	6	3
Cerebro-spinal meningitis						1	1						
Intermittent fever					1			1					

Deaths in Brooklyn—MALES—Continued.

CAUSES OF DEATH.	Under 1 year of age.	1-	2-	3-	4-	5-	10-	15-	20-	25-	30-	35-	40-	45-
Order 1. (Miasmatic Diseases.)														
Remittent fever		1	---	1	---	3	---	1	2	1	---	1	1	---
Pyemia	1	---	---	---	---	---	---	1	---	1	---	---	---	1
Other miasmatic diseases	2	---	---	1	1	---	---	1	---	---	---	---	---	1
Total miasmatic diseases	398	185	58	30	33	69	14	32	39	52	41	55	35	41
Order 2. (Enthetic and Inoculated Diseases.)														
Syphilis	1	---	---	---	---	---	---	---	---	1	1	---	---	---
Malignant pustule		---	---	---	---	---	---	---	---	---	---	---	---	---
Total of enthetic diseases	1	---	---	---	---	---	---	---	---	1	1	---	---	---
Order 3. (Dietic Diseases.)														
Starvation (privation, &c.)	1	---	---	---	---	---	---	---	---	---	---	---	---	---
Purpura		1	---	---	---	---	---	---	---	---	---	---	---	1
Scurvy		---	---	---	---	---	---	---	---	1	---	---	---	---
Alcoholism		---	---	---	---	---	---	---	---	---	1	5	3	3
Total dietic diseases	1	1	---	---	---	---	---	---	---	1	1	5	3	4
Total of zymotic class	400	187	58	30	33	69	14	32	39	54	43	60	38	45

CLASS II.—Constitutional Diseases.

Order 1. (Diathetic Diseases.)

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Total
Gout.....	—	—	—	—	—	—	—	—	—	—	—	—	1
Rheumatism ..	—	—	—	—	—	—	—	—	—	—	—	—	—
Dropsy	1	1	—	—	—	—	—	—	—	—	—	—	1
Cancer.....	—	—	—	—	—	—	—	—	—	—	—	—	3
Total of diathetic diseases.....	1	1	1	—	—	—	2	—	—	—	—	—	4

Order 2. (Tubercular Diseases.)

Scrofula	5	1	2		1	4					
Tubercles mesenterica	95	27	11	1	1	4					
Phtisis pulmonalis	1	2	2			3	18	35	38	33	27
Hydrocephalus	50	21	12	3	3	7					
Total of tubercular diseases	151	51	27	4	5	18	3	18	35	38	33
Total of constitutional class	151	52	28	5	5	20	4	20	38	34	36

CLASS III.—Local.
Order 1. (Nervous System.)

[illegible]

Deaths in Brooklyn—MALES—Continued.

CAUSES OF DEATH.	Under 1 year of age.	1-	2-	3-	4-	5-	10-	15-	20-	25-	30-	35-	40-	45-
Order 1. (Nervous System.)														
Epilepsy						2			2	1		1		
Stroke									3	4	5	4	4	2
Convulsions	100	28	6	3	5	4								
Fetanus	7				1				1				1	
Congestion of the brain	20	3	2	1	1	4		2		1	5	1	3	2
Other diseases of the brain	1													
Total diseases of the nervous system	146	39	13	8	10	15	3	6	7	17	14	13	18	12
Order 2. (Circulatory Diseases.)														
Pericarditis							2			2		3		2
Aneurism														
Hypertrophy of the heart	1						1	2	2				1	4
Valvular disease of the heart														
Fatty degeneration of the heart														
Phlebitis														
Other diseases of the heart	1				2	2	1	3	1		1	2	2	3
Total diseases of the circulatory system,	2				2	2	4	5	3	2	1	5	3	9

Order 3. (Respiratory System.)

Order 3. (Respiratory System.)										
Laryngitis	1		1	1	3					
Bronchitis	15	3	2	1						
Pleurisy										
Hydrothorax										
Empyemia										
Pneumonia	22	13	4	5	1	2		3	2	1
Emphysema										
Asthma										
Pleuro-pneumonia		1								
Congestion of the lungs	10	4	2						2	
Other diseases of the lungs		1								
Total diseases of the respiratory system,	48	22	9	6	3	5		3	4	8

Order 4. (Digestive System.)

Order	4.	(Digestive System.)
Gastritis	1	
Enteritis	20	1
Peritonitis		4
Ascites		1
Ulceration of intestines		1
Hernia		
Ileus (colic, &c)	1	1
Hepatitis		
Jandice	2	
Liver disease		

[illegible]

Deaths in Brooklyn—MALES—Continued.

CAUSES OF DEATH.	Under 1 year of age.	1-	2-	3-	4-	5-	10-	15-	20-	25-	30-	35-	40-	45-
Order 4. (Nutrition.)														
Debility	66	3	1	1	---	2	---	---	---	1	---	3	1	1
Total diseases of nutrition	66	5	1	1	---	2	---	---	---	1	---	3	1	1
Total of developmental class	141	4	1	1	---	2	---	---	---	1	---	3	1	1
Class V.—Deaths by Violence.														
Order 1. (Accidents and Negligence.)														
Fractures and contusions												1		
Burns and scalds		1												1
Poison			1											
Accidental injuries	1	2	3	1	3	3	2	4	5	2	5	4	3	2
Drowning	2		1		1	2	1	1	4	1	1	5	5	1
Suffocation														
Total deaths by accidents and negligence,	3	3	5	1	4	5	3	5	9	3	6	10	8	4
Order 3. (Homicide.)														
Murder and Manslaughter									1	1				
Total deaths by homicide									1	1				

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total
Order 4. (Suicide.)																					
Suicide (manner not specified)																					
Total deaths by suicide	3																				3
Total deaths by violence	3		3	5	1	4	5	3	5	10	5	6	11	10							5
Sudden deaths (cause unascertained.)	1				1																
Total mortality from all causes.	919	308	120	52	59	121	36	74	103	131	110	143	117	120							

[illegible]

CLASS II.—Constitutional Diseases.

Order 1. (Diathetic Diseases.)

	1	2	3	4
Gout	1	1	1	1
Rheumatism	1	1	1	1

Deaths in Brooklyn—MALES—Continued.

CAUSES OF DEATH.	50-	55-	60-	65-	70-	75-	80-	85-	90-	95-	Not stated	Native.	Foreign.	Total.
Order 1. (Diathetic Diseases.)														
Dropsy	1	1	1	3		2						11	6	19
Cancer	1	6	3	1		1						7	12	19
Total of diathetic diseases	2	8	4	5		3						20	24	44
Order 2. (Tubercular Diseases.)														
Scrofula												13		13
Tabes mesenterica							1					138	2	140
Phthisis pulmonalis	18	11	8	5	4	4	2					95	179	274
Hydrocephalus	1											94	3	97
Total of tubercular diseases	19	11	8	5	4	4	3					340	184	524
Total of constitutional class	21	19	12	10	4	7	3					360	208	568
Class III.—Local.														
Order 1. (Nervous System.)														
Meningitis	2											41	7	48
Cerebritis								1				4	3	7
Softening of the brain			2	1		1						2	5	7

Apoplexy -----	5	5	1	3	3	1	1	16	32	48
Paralysis, (general) -----	1	2	5	4	1	1	1	9	10	19
Insanity -----		1						1		1
Epilepsy -----		2		1				5	4	9
Sunstroke -----	2	3	3					2	28	30
Convulsions -----								145	1	146
Tetanus -----								9	1	10
Congestion of the brain -----	1	1		2				31	18	49
Other disease of the brain -----		1						2		2
Total diseases of the nervous system -----	11	15	11	11	3	2	1	267	109	376
Order 2. (Circulatory System.)										
Pericarditis -----	1	1						6	5	11
Aneurism -----		1						1		1
Hypertrophy of the heart -----			1					2	1	3
Valvular disease of the heart -----	2	1	4	1				6	11	17
Fatty degeneration of the heart -----				1				1		1
Phlebitis -----										
Other diseases of the heart -----	3		3	2	1	1		14	14	28
Total diseases of the circulatory system, -----	6	3	8	4	1	1		30	31	61
Order 3. (Respiratory System.)										
Laryngitis -----								6	1	7
Bronchitis -----		1		3	1		1	23	7	30
Pleurisy -----	2	1						3	4	7

Deaths in Brooklyn—MALES—Continued.

CAUSES OF DEATH.	50-	55-	60-	65-	70-	75-	80-	85-	90-	95-	Not stated	Native.	Foreign.	Total.
Order 8. (Integumentary System.)														
Phlegmon												1		1
Skin disease														
Total diseases of integumentary system.														1
Total of local class.....	36	28	29	28	11	9	4	3				498	237	735
Class IV.—Developmental.														
Order 1. (Children.)														
Premature birth												54		54
Cyanosis												12		12
Other malformations												5		5
Teething												5		5
Total developmental diseases of children,												76		76
Order 3. (Age.)														
Old age		1	1	1	4	3	6	3	4	1		9	15	24
Total diseases of age		1	1	1	4	3	6	3	4	1		9	15	24

Deaths in Brooklyn—MALES—Continued.

CAUSES OF DEATH.	50-	55-	60-	65-	70-	75-	80-	85-	90-	95-	Not stated	Native.	Foreign.	Total.
Order 4. (Suicide.)														
Suicide (manner not specified) -----	2											2	5	7
Total deaths by suicide -----	2											2	5	7
Total deaths by violence -----	7	2	4								4	40	53	93
Sudden deaths (cause unascertained) -----														3
Total mortality from all causes -----	94	74	70	58	27	28	14	6	5	1	6	1934	861	2801

Deaths in Brooklyn.
FEMALES.

CAUSES OF DEATH.	Under 1 year of age.	1-	2-	3-	4-	5-	10-	15-	20-	25-	30-	35-	40-	45-
CLASS I.—Zymotic.														
Order 1. (Miasmatic Diseases.)														
Small-pox														
Measles	9	7	4	1	1	2								
Scarlatina	3	3	12	9	6	9	2							
Diphtheria	3	8	4	4	4	9								
Quinsy (Tonsillitis, &c.)														
Croup (pseudo-membranous)	2	5	8	1	2	1								
Whooping-cough	3	5	3		1	1								
Typhus fever						1		1				1	1	
Typhoid fever		2	2	1		3	7	11	8	10	2	4	4	5
Erysipelas	1					1		1			1			
Puerperal fever									3	4	4	2	1	
Carbuncle														
Dysentery (acute)	19	15	1	1		6		1	2	4	1	5	2	
Diarrhoea (acute)	40	20	5	5	1	1	1		2	2	1	2		3
Diarrhoea (chronic)	7	5	1						3	1		2	1	
Cholera Asiatica		3	4	5	5	14	10	10	17	35	29	35	30	26
Cholera infantum	233	109	13			1								
Cholera morbus	4	2	1	2	4	9			1	7	7	8	7	4
Cerebro-spinal meningitis	1	2						1						

Deaths in Brooklyn—FEMALES—Continued.

CAUSES OF DEATH.	Under 1 year of age.	1-	2-	3-	4-	5-	10-	15-	20-	25-	30-	35-	40-	45-
Order 1. (Miasmatic Diseases.)														
Intermittent fever-----			1		1							1		
Remittent fever-----	2	1		1	2		1	4	1	1		2		
Pyæmia-----														
Other miasmatic diseases-----								1					1	
Total of miasmatic diseases-----	327	187	59	30	27	58	21	30	37	64	45	62	47	38
Order 2. (Enthetic or Inoculated Diseases).														
Syphilis-----	1													
Malignant pustule-----														
Total of enthetic diseases-----	1													
Order 3. (Dietetic Diseases.)														
Starvation (privation, &c.)-----														
Purpura-----														
Scurvy-----														
Alcoholism-----										1				
Total of dietetic diseases-----										1				
Total of zymotic class-----	328	187	59	30	27	58	21	30	37	65	45	62	47	38

Deaths in Brooklyn—FEMALES—Continued.

CAUSES OF DEATH.	Under 1 year of age.	1-	2-	3-	4-	5-	10-	15-	20-	25-	30-	35-	40-	45-
Order 1. (Nervous System.)														
Insanity									1	1			1	
Epilepsy							1			1		2		
Stroke											3	1	1	1
Convulsions	84	21	14	3	3	3				1		1		
Tetanus	4													
Congestion of the brain	11	4	4	2	3	2	1	1		1		3	1	
Other diseases of the brain	1	2		1	1						1			
Total diseases of nervous system	107	37	19	9	10	10	3	1	3	8	7	12	8	2
Order 2. (Circulatory System.)														
Pericarditis									1		2	1		1
Aneurism														
Hypertrophy of the heart							1	2					1	1
Valvular disease of the heart	1						1	1	1	2		1		3
Fatty degeneration of heart														
Phlebitis											1			
Other diseases of the heart	2						2	1	1	1	4		2	2
Total diseases of the circulatory system		2	1				4	4	3	3	7	2	3	7

Deaths in Brooklyn—FEMALES—Continued.

CAUSES OF DEATH.	Under 1 year of age.	1-	2-	3-	4-	5-	10-	15-	20-	25-	30-	35-	40-	45-
Order 4. (Digestive System.)														
Other diseases of the digestive system.....	1	---	---	---	---	---	---	---	---	---	---	1	---	1
Other diseases of the liver.....		---	---	---	---	---	---	---	---	---	---	1	---	---
Total diseases of the digestive system....	20	11	3	2	---	---	4	4	2	3	5	7	5	9
Order 5. (Urinary System.)														
Nephritis.....		---	---	---	---	---	---	---	---	---	---	---	---	---
Nephria (Bright's disease).....		---	---	---	---	---	---	1	2	6	---	3	2	2
Cystitis.....		---	---	---	---	---	---	---	---	---	---	---	---	---
Rupture of bladder.....		---	---	---	---	---	---	---	---	---	---	---	---	---
Other diseases of the urinary system.....		---	---	---	---	---	---	---	---	---	---	---	---	---
Total disease of the urinary system.....		---	---	---	---	---	---	1	2	6	---	3	2	2
Order 6. (Generative System.)														
Metritis.....		---	---	---	---	---	---	---	---	---	1	---	---	---
Uterine tumor.....		---	---	---	---	---	---	---	---	---	---	1	---	---
Arthritis and necrosis.....		---	---	1	---	1	---	---	---	---	---	---	---	---
Total diseases of the generative system....		---	---	1	---	1	---	---	---	---	1	1	---	---

Order 8. (Integumentary System.)														
Phlegmon	1													
Skin disease	1													
Total disease of the integumentary system	2													
Total of local class	168	71	27	14	13	19	14	12	11	22	22	31	21	22
CLASS IV.—Developmental.														
Order 1. (Children.)														
Premature birth	32													
Cyanosis	5													
Other malformations	4													
Teething	6	6												
Total developmental diseases of children	47	6												
Order 2. (Women.)														
Chlorosis						1		1						
Childbirth. (See puerperal fever.)									1	1	2	1	1	
Convulsions puerperal								2	2	3	4		1	
Flooding										6	3	4	1	1
Total developmental diseases of women						1		3	3	10	9	5	3	1

Deaths in Brooklyn—FEMALES—Continued.

CAUSES OF DEATH.	Under 1 year of age.												
	1-	2-	3-	4-	5-	10-	15-	20-	25-	30-	35-	40-	45-
Order 3. (Age.)													
Old age													
Total diseases of age													
Order 4. (Nutrition.)													
Debility	45	2	2	1	2	1				1	1		2
Total diseases of nutrition	45	2	2	1	2	1				1	1		2
Total of developmental class	92	8	2	1	3	1	3	3	10	10	6	3	3
CLASS V.—Deaths by Violence.													
Order 1. (Accidents and Negligence.)													
Fractures and contusions													
Burns and scalds	1	1		1		1							
Poison		1											
Accidental injuries	1	2	1	2	1	4	1	1				2	1
Drowning									1	1		1	
Suffocation	1												
Total deaths by accidents and negligence	3	4	1	3	1	5	1	1	1	1		3	1

Deaths in Brooklyn—FEMALES—Continued.

CAUSES OF DEATH.	50-	55-	60-	65-	70-	75-	80-	85-	90-	95-	Not stated	Native.	Foreign.	Total	Total both sexes.	Percentage of each cause in total.
CLASS I.—Zymotic.																
Order I. (Miasmatic Diseases.)																
Small-pox	---	---	---	---	---	---	---	---	---	---	---	23	1	24	41	.02
Measles	---	---	---	---	---	---	---	---	---	---	---	40	4	44	85	.77
Scarlatina	---	---	---	---	---	---	---	---	---	---	---	32	---	32	77	1.60
Diphtheria	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1.46
Quinsy (tonsillitis, &c.)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1	.02
Croup (pseudo membranous)	---	---	---	---	---	---	---	---	---	---	---	19	---	19	41	.77
Whooping-cough	---	---	---	---	---	---	---	---	---	---	---	13	---	13	21	.39
Typhus fever	---	1	1	1	---	---	---	---	---	---	---	1	6	7	16	.30
Typhoid fever	2	1	1	2	---	1	---	---	---	---	---	38	28	66	115	2.18
Erysipelas	---	---	---	---	---	---	---	---	---	---	---	3	1	4	12	.23
Puerperal fever	---	---	---	---	---	---	---	---	---	---	---	2	12	14	14	.27
Carbuncle	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1	.02
Dysentery (acute)	6	4	3	7	3	---	---	---	---	---	---	51	29	80	151	2.86
Diarrhœa (acute)	---	1	1	3	2	1	1	1	---	---	---	75	18	93	190	3.60
Diarrhœa (chronic)	---	---	---	2	---	1	---	---	---	---	---	14	9	23	43	.81
Cholera, Asiatica	14	8	8	7	2	4	2	1	---	---	---	68	201	269	557	10.54
Cholera infantum	---	---	---	---	---	---	---	---	---	---	---	351	5	356	762	14.42
Cholera morbus	2	4	---	8	1	2	---	---	---	---	---	28	46	74	142	2.69
Cerebro-spinal meningitis	---	---	---	---	---	---	---	---	---	---	---	4	---	4	7	.13

[illegible]

Deaths in Brooklyn—FEMALES—Continued.

CAUSES OF DEATH.	50-	55-	60-	65-	70-	75-	80-85-	90-95-	Not stated	Native.	Foreign.	Total.	Total both sexes.	Percentage of each cause in total.
Order 1. (Diathetic Diseases.)														
Dropsy	2	2	1	2	1	---	1	1	---	6	13	19	38	.72
Cancer	3	4	8	4	---	2	---	---	---	25	16	41	69	1.13
Total of diathetic diseases	5	6	10	6	1	2	1	1	---	34	29	63	107	2.02
Order 2. (Tubercular Diseases.)														
Scrofula	---	---	---	---	---	---	---	---	---	7	2	9	22	42
Tabes mesenterica	---	---	---	---	---	---	---	---	---	125	1	126	266	5.03
Phthisis pulmonalis	12	11	7	7	3	3	1	---	---	113	126	239	513	9.71
Hydrocephalus	---	---	---	---	---	---	---	---	---	54	1	55	152	2.88
Total of tubercular diseases	12	11	7	7	3	3	1	---	---	299	130	429	253	18.04
Total of constitutional class	17	17	17	13	4	5	2	1	---	333	159	492	1060	20.06
CLASS III.—Local.														
Order 1. (Nervous System.)														
Meningitis	2	---	---	---	---	---	---	---	---	33	3	36	84	1.58
Cerebritis	---	---	1	---	---	---	---	---	---	1	2	3	10	.19

[illegible]

Deaths in Brooklyn—FEMALES—Continued.

CAUSES OF DEATH.	50-	55-	60-	65-	70-	75-	80-	85-	90-	95-	Not stated	Native.	Foreign.	Total.	Total both sexes.	Percentage of each cause in total.
Order 8. (Integumentary System.)																
Phlegmon	---	---	---	---	---	---	---	---	---	---	---	1	---	1	1	.02
Skin disease	---	---	---	---	---	---	---	---	---	---	---	1	---	1	2	.04
Total diseases of integumentary system,	---	---	---	---	---	---	---	---	---	---	---	2	---	2	3	.06
Total of local class	30	18	21	22	12	8	10	3	1	---	2	426	168	594	1329	25.16
CLASS IV.—Developmental.																
Order 1. (Children.)																
Premature birth	---	---	---	---	---	---	---	---	---	---	---	32	---	32	86	1.62
Cyanosis	---	---	---	---	---	---	---	---	---	---	---	5	---	5	17	.32
Other malformations	---	---	---	---	---	---	---	---	---	---	---	4	---	4	9	.17
Teething	---	---	---	---	---	---	---	---	---	---	---	12	---	12	17	.32
Total developmental diseases of child'n.	---	---	---	---	---	---	---	---	---	---	---	53	---	53	129	2.44
Order 2. (Women.)																
Chlorosis	---	---	---	---	---	---	---	---	---	---	---	2	---	2	2	.04
Childbirth. (See puerperal fever)	---	---	---	---	---	---	---	---	---	---	---	2	4	6	6	.11
Convulsions, puerperal	---	---	---	---	---	---	---	---	---	---	---	5	7	12	12	.23

Deaths in Brooklyn—FEMALES—Continued.

CAUSES OF DEATH.	50-	55-	60-	65-	70-	75-	80-	85-	90-	95-	Not stated	Native.	Foreign.	Total.	Total both sexes.	Percentage of each cause in total.
Order 3. (Homicide.)																
Murder and Manslaughter															2	.04
Total deaths by homicide															2	.04
Order 4. (Suicide.)																
Suicide (manner not specified)	1													2	9	.17
Total deaths by suicide	1													2	9	.17
Total deaths by violence	2		1	1							1	17	14	31	124	2.35
Sudden deaths (cause unascertained, females)											1	3	2	5	8	.15
Total mortality from all causes (females)	75	57	57	70	36	36	33	20	5	3	4	1706	782	2492		
Total of both sexes in each period of life,	169	131	127	128	63	64	47	26	10	4	10	3640	1643	5293	5293	100.00
Percentage of deaths at each period of life upon total mortality from all causes	3.20	2.48	2.40	2.42	1.19	1.21	.90	.50	.19	.08	.19			100.00		

Report of births in the city of Brooklyn and county of Kings, for the three months ending June 30, 1866.

MONTH.	TOTAL.	COLOR.		SEX.		NATIVITY OF PARENTS.				
		White.	Black.	Male.	Female.	Foreign.	Native.	Foreign father only.	Foreign mother only.	Not stated.
April	49	49	.....	24	25	21	18	7	3	.....
May	341	340	1	168	173	130	145	33	23	8
June	378	374	4	198	180	152	143	39	24	11
Total	768	763	5	390	378	303	306	79	50	19

Report of births in the city of Brooklyn and county of Kings, for the three months ending September 30, 1866.

MONTH.	TOTAL.	COLOR.		SEX.		NATIVITY OF PARENTS.				
		White.	Black.	Male.	Female.	Foreign.	Native.	Foreign father only.	Foreign mother only.	Not stated.
July	377	370	7	207	170	172	137	35	19	14
August	433	424	9	226	207	173	166	45	44	5
September	413	410	3	197	216	159	167	54	24	9
Total	1,223	1,204	19	630	593	504	470	134	87	28

Report of marriages in the city of Brooklyn and county of Kings, for the five months ending September 30, 1866.

MONTH.	TOTAL.	COLOR.		NATIVITY.				CONDITION.			
				Foreign.		Native.		Not stated.		Single.	
		White.	Black.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
May	50	50	.....	20	14	22	28	8	41	6	5
June	109	109	.....	32	30	65	63	12	85	20	17
Total ..	159	159	.....	52	44	87	94	20	126	26	22
July	100	100	.....	42	35	50	58	8	81	14	6
August	88	88	.....	23	23	52	56	8	63	13	13
September	111	111	.....	47	37	51	63	13	77	17	20
Total	299	299	.....	117	95	153	177	29	226	44	39
Total in five months....	458	458	.....	169	139	240	271	49	352	70	61

Ages of persons married.

MONTH.	Under 20.		20 to 25.		25 to 30.		30 to 35.		35 to 40.		40 to 45.		45 to 50.		50 to 55.		55 to 60.		60 to 70.		Not stated.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.		
May .....	...	11	17	22	19	9	5	...	...	1	2	1	...	1	...	1	...	...	...	5	5
June	1	23	43	49	30	18	13	6	5	2	8	...	3	...	...	...	...	...	...	11	11
Total	1	34	60	71	49	27	18	6	5	3	5	1	3	1	1	...	1	...	...	16	16
July .....	...	32	43	39	34	15	5	6	4	4	3	1	3	...	2	...	...	...	...	6	8
August	1	26	31	32	30	12	6	3	6	3	3	1	...	...	...	1	...	...	...	9	10
September	2	24	40	40	35	23	6	5	6	4	3	...	2	2	3	...	...	...	1	13	13
Total	3	82	114	111	99	49	17	14	16	11	9	2	5	2	5	1	1	...	2	1	28	31
Total in five months	4	116	174	182	148	76	35	20	21	14	14	3	8	3	6	1	2	...	2	1	44	47

APPENDED STATEMENT—STATISTICAL NOSOLOGY.

NAMES AND DEFINITIONS OF CAUSES OF DEATH—THE STATISTICAL NOMENCLATURE.

The practical value of statistical facts, particularly as regards sanitary science and medical knowledge, depends in no small degree upon the habitual employment of definite and accepted terms in describing causes and physical conditions; and in no department of public or medical information is there greater want of precision and care in the use of terms than in the ordinary returns of causes of death as given in the certificates that are presented to boards of health.

Hence it was deemed important to adopt a well accepted classification, and likewise the nomenclature that was already most perfect and most generally approved. The classification and nomenclature that had stood the test of more than twenty years revisions and trial by the Registrar-General of England, was adopted, with only such revisions in names as would fully adapt the system to our necessities. To Dr. Wm. Farr, the most distinguished of vital statisticians, we are indebted for this classification. It received the full endorsement of the International Statistical Congress at its meeting in Paris in the year 1855. The subjoined columns present the names in plain English as far as practicable, and they sufficiently explain the whole system used in the weekly and quarterly tabulations of records of death.

Aside from the immediate advantages of such a system for economizing and verifying the clerical work connected with the death registration, it affords needed facilities for correspondence and comparisons with all other well organized bureaux of vital statistics. The following note was issued to the physicians in the Metropolitan Sanitary District previously to placing this nomenclature in their hands :

METROPOLITAN BOARD OF HEALTH—BUREAU OF VITAL }
 STATISTICS, No. 301 MOTT ST., N. Y., May 1866. }

TO DR. ———— :

DEAR SIR : By direction of the Board of Health, I herewith forward to you copies of the blank forms for certificates of births, deaths, and still-births, which are now required by this bureau. A copy of the act creating the Metropolitan Board of Health, together with the Sanitary Code, is likewise enclosed.

Believing that every physician will cheerfully aid in giving effect to the provisions of the Code, the Board of Health invites your attention to section 13 of the Act, and sections 13, 14, 16, 18, 19 and 20 of the Code, and respectfully requests your utmost endeavor to aid in the prompt fulfillment of all the duties therein defined, as pertaining to births and deaths. Physicians will be freely supplied with whatever blank forms they may require for returns to this Bureau.

The enclosed copy of the *Nomenclature* which the Bureau has adopted for the purpose of *statistical classification and legal record*, is respectfully submitted to you, in the expectation that it will aid in giving at once greater definiteness and uniformity to certificates of death and to the reports and the permanent registration by the Board of Health. It will be observed that this *Nomenclature* is, in all essential respects, the same as that which has been adopted by the International Statistical Congress* and by the American Medical Association.†

It is decided, as far as practicable, to use *accepted English* names in our registration, though the Latin appellations of the same are given in the duplicate columns of the accompanying statistical lists. For the convenience of practitioners of medicine who neither speak nor write the English language, a special catalogue of all the names is presented in German, French, Latin and English, with our request that their *certificates* shall give the *causes of death* in English or Latin.

The adoption of this, or any other Statistical Nosology, should have in view mainly the convenience and benefit of accurate comparison of the vital statistics of the chief cities and nations in which such statistics are most carefully registered, and made subservient

* Proceedings of the International Statistical Congress, Paris, 1855, on Reports submitted by Dr. Wm. Farr.

† Transactions American Medical Association, 1858 and 1859.

to purposes of public utility. The practical study of *causes* and the means of *prevention* of diseases, is one of the more immediate and important objects of such classification and records. Faithful public registration of causes of death, so certified as to have the most definite and widely accepted significance, is also an end to be sought in these records; while for legal and historical purposes they are of such importance as to require the utmost accuracy and completeness.

BRIEF SUGGESTIONS TO MEDICAL PRACTITIONERS RESPECTING CERTIFICATES OF DEATH.

1. Write the causes of death, when there is more than one cause, under each other, in the order indicated by the words

FIRST.

SECOND.

2. It will usually be advisable thus to register the causes in the order of time, and in all cases give the duration of each disease and complication.

3. The duration of the diseases (thus certified as "FIRST," "SECOND,") will not unfrequently answer the questions every hour asked in the Bureau of Records—"Which disease killed the patient?" "What shall be recorded as the cause of death?"

4. The period of the continuance of the respective causes certified, should imply the time intervening between the first appearance of the characteristic symptoms and death. All inflammatory and febrile diseases should be dated from the first rigors, thus:

And that the CAUSE of h . death was—

FIRST.—*Typhus Fever*. Existing for 20 days before death.

SECOND.—*Pneumonia*. Beginning six days before death:

Implying that the typhus *commenced* twenty days before death, and that pneumonia supervened on the 14th day of the fever, or six days before death. The case would go on record as a death from *typhus*.

5. In all fatal cases of small-pox, state whether *vaccination* had been performed, and at what period, thus:

FIRST.—*Small-pox* (confluent.) Existing for 12 days before death.

SECOND.—*Convulsions*. Beginning six hours before death.

Said to have been vaccinated in youth, but no cicatrix.

6. Surgeons will in all cases please return the primary disease or injury; the period of the operation (if an operation was per-

formed) before death, and lastly the period at which any secondary disease, such as erysipelas, peritonitis, fatal hemorrhage, &c., supervened, thus :

FIRST.—*Incarcerated Hernia.* Existing for four days, before death.

SECOND.—*Operation 22 hours, sloughing of intestine—with Peritonitis*—beginning 16 hours before death.

Such a case would go on record as a death from *Incarcerated hernia, with sloughing, &c.*

A copy of the Classified Nomenclature of causes of death is herewith enclosed. Foreign physicians in the Metropolitan District who wish a copy of the same list in the synonyms of the four languages before mentioned, may obtain it at this Bureau.

On behalf of the Board of Health,

Respectfully yours,

ELISHA HARRIS, M. D.,
Registrar of the Bureau of Vital Statistics.

STATISTICAL NOMENCLATURE OF CAUSES OF DEATH,

Classified and arranged upon the basis recommended by the International Statistical Congress for the purpose of Public Registration. The synonymous terms of the English, Latin, French, and German languages, are given below, to insure accurate and comparable Certificates of Death, and uniformity in the Records of Mortality in the Metropolitan Sanitary District.*

Tabular List.	Supplementary List.	Tabelle.	Supplementarische Tabelle.
THE CHIEF CAUSES OF DEATH AS REGISTERED IN THE METROPOLITAN SANITARY DISTRICT.	DISEASES OF SPECIAL CHARACTER, OR RARELY FATAL (with explanatory suggestions.)	ANGEBEND DIE HAUPT TODESURSACHEN REGISTRIERT IM METROPOLITAN SANITÄTS DISTRICT.	SPECIELLE UND SELTEN ZUM TODE FÜHRENDE KRANKHEITEN.
CLASS I.	CLASS I.	CLASS I.	CLASS I.
ZYMOTIC DISEASES.		ZYMOTISCHE KRANKHEITEN.	
ORDER I. (<i>Miasmatic</i> .)	ORDER I.	ORDER I. (<i>Miasmatische</i> .)	ORDER I.
1. Small-pox.	1. varioloid	1. Blattern.	1. varioloiden.
2. Measles.	chicken pox.	2. Masern.	wasser blattern.
3. Scarlatina.	miliaria.	3. Scharlach Fieber.	frieseln.
4. Diphtheria.		4. Diphtheria.	
5. Croup (membranous.)	6. mumps (parotitis.)	5. Hautige Braune.	6. ohdrusenentzündung. (mumps.)
6. Quinsy (Tonsillitis.)		6. Entzündliche Braune.	
7. Whooping cough.		7. Keuchhusten.	
8. Typhus Fever.		8. Typhus.	
9. Typhoid Fever.		9. Typhus abdominalis.	9. gelbes fieber.
10. Erysipelas.	9. yellow fever.	10. Rose (Rothlauf.)	
11. Puerperal Fever.	irritative fever.	11. Kindbett-fieber.	
12. Carbuncle.	12. boil.	12. Carbunkel.	12. blutgeschwure.
13. Influenza.	erythema.	13. Grippe.	hautrothe.
14. Dysentery.		14. Ruhr.	
15. Diarrhœa.		15. Diarrhœ.	
16. Cholera (Asiatic.)	16. cholera morbus.	16. Cholera (asiatische.)	16. cholera morbus.
17. Cholera Infantum.		17. Cholera (in kinden.)	
18. Cerebro-spinal Meningitis.		18. Cerebrospinale Meningitis.	
19. Intermittent Fever.	19. congestive fever.	19. Wechselfieber.	19. perniciosos fieber
20. Remittent Fever.	pernicious fever.	20. Remittirendes Fieber.	
21. Rheumatism (See diathetic do.)		21. Rheumatismus.	
22. Pyæmia.		22. Pyæmie.	
Other Miasmatic Diseases.		Andere Miasmatische Krankheiten.	
ORDER II. (<i>Enthetic or inoculated</i> .)	ORDER II.	ORDER II. (<i>Enthetische oder inoculirte Krankheiten</i> .)	ORDER II.
1. Syphilis.	1. gonorrhœa.	1. Syphilis.	1. tripper.
a. Primary.	gonorrhœal ophthalmia.		gonorrhœische augen-entzündung.
b. Secondary.	stricture of the urethra (if in consequence of gonorrhœa.)		verengung der harnrohre (wenn eine folge von tripper.)
2. Syphilitic Disease of the Bones.	tertiary syphilis.	2. Syphilitische Krankheit der Knochen.	tertiäre syphilis.
3. Malignant Pustule.		3. Milzbrandcarbunkel.	4. sections — wunden durch einimpfung von toden oder giftigen thierischen stoffen.
4. Hospital Gangrene.	4. dissection wounds—(necrosis) from inoculation by dead or poisonous animal matter.	4. Hospital Brand.	
5. Hydrophobia.	glanders.	5. Wasserscheu.	
ORDER III. (<i>Dietetic</i> .)	ORDER III.	ORDER III. (<i>Dietetische Krankheiten</i> .)	ORDER III.
1. Starvation. (Privation.)	1. want of breast milk.	1. Hunger und Entbehrung.	1. rothz. entbehrung der muttermilch.
2. Purpura.	rickets.	2. Purpura, oder Blutflecken-Krankheit.	hungerfieber.
3. Scurvy.	bronchocele.	3. Scorbut.	kropf.
4. Alcoholism.	cretinism.	4. Trunksucht oder Sauferyskrasie.	cretinismus.
a. Delirium Tremens.	ergotism.		mutterkornvergiftung
b. Intemperance.			

* The synonyms in the Latin and French languages are omitted in this report, being unimportant to the Board of Health and to the general reader.

ORDER IV. (*Parasitic.*)

1. Hydatids.
2. Trichiniasis.
Other Parasitic Diseases.

CLASS II.
CONSTITUTIONAL.ORDER I. (*Diathetic.*)

1. Gout.
2. Rheumatism.

3. Dropsy (*state in what part of the body and from what cause.*)
4. Cancer (*the kind of cancer, the organs or parts which it affects, and the period of its continuance before death should be stated in each case.*)

5. Noma (cancrum-oris &c.)
6. Mortification.
Other Constitutional Diseases.

ORDER II. (*Tubercular.*)

1. Scrofula.
2. Tabes Mesenterica (Marasmus.)
3. Phthisis Pulmonalis.
4. Hydrocephalus.
Other Consumptive Diseases.

CLASS III.

LOCAL.

ORDER I. (*Nervous System.*)

1. Meningitis.
2. Encephalitis.
3. Softening of the Brain.
4. Apoplexy.
5. Paralysis (general.)
6. Insanity.
7. Epilepsy.
8. Sunstroke.
9. Convulsions (*state from what cause.*)

ORDER IV.

1. thrush.
porrigo.
scabies.
2. tape worm.
ascarides.

CLASS II.

ORDER I.

1. rheumatic gout.
2. articular rheumatism.
rheumatic disease of the heart (*when known or believed to be primary or constitutional.*)

3. anasarca.
4. (*specify the variety and location of cancer, as, for example.*)
(soft) (of the liver, eye, &c. (colloid) (of the kidney) (epithelial) (of tongue,) (scirrhous) (of breast.) (melanotic) (of the eye) (osteosarcoma) (of the lower jaw, &c.) lupus.
5. canker (mention the part affected.)
6. dry gangrene.
bed sore.
7. leucocythemia.
anemia.

ORDER II.

1. serofulous abscess of joints.
hip disease.
psosas abscess.
2. tubercular peritonitis.
3. hæmoptysis (from tuberculosis.)
4. tubercular meningitis.

CLASS III.

ORDER I.

1. acute hydrocephalus.
2. myelitis (inflammation of spinal cord)
3. paraplegia, hemiplegia, progressive locomotor ataxia chorea.
shaking palsy.
6. (*state kind of insanity*) monomania, dementia, melancholia, mania, grief, fright, &c.
false croup (stridulous croup.)
hysteria.

ORDER IV. (*Schmarotzer Krankheiten.*)

1. Hydatiden (Echinococcus.)
2. Trichinen-Krankheit.
Wurmsucht und andere Schmarotzer Krankheiten.

CLASS II.

CONSTITUTIONELLE KRANKHEITEN.

ORDER I. (*Diathetische.*)

1. Gicht.
2. Rheumatismus.

3. Wassersucht (befund ursache.)
4. Krebs (die verschieden en krebsformen, die organe und theile welche angegriffen worden sind, und die dauer der krankheit, sohen in jedem falle angegeben werden)

5. Wasserkrebs.
6. Brand.
7. Andere constitutionelle Krankheiten.

ORDER II. (*Tuberkulose Krankheiten.*)

1. Scropheln.
2. Marasmus.
3. Schwindsucht.
4. Aeusserer, oder innerer Wasserkopf.
Andere zehrende Krankheiten.

CLASS III.

OERTLICHE KRANKHEITEN.

ORDER I. (*Krankheiten des Nerven-Systems.*)

1. Hirnhautentzündung.
2. Gehirnentzündung.
3. Gehirnerweichung.
4. Schlagfluss, Nervenschlag.
5. Lahmung (allgemeine)
6. Verrucktheit.
7. Fallsucht.
8. Sonnenstich.
9. Krampfe (man gebe an von welcher ursache.)

ORDER IV.

1. schwammchen, kopfgriind, kratze.
2. bandwurm.
spulwurm.

CLASS II.

ORDER I.

1. rheumatische gicht.
2. gelenk rheumatismus
rheumatische krankheit des herzens.

3. hautwassersucht.
4. (markschwamm) (der leber.)
(alveolarkrebs.) (der nieren.)
(hautkreb.) (der zunge.)
(scirrhous.) (der brust)
(schwarzer krebs.) (der augen.)
(knöchelfleischgeschwulst.) (der unteren kinnlade.)

5. trockener brand.
6. wasserkrebs, blutnangel, leukämie, etc., etc.

ORDER II.

1. lendenmuskelaabscess
scrophuloserabscess.
der gelenke.
huf igelenkentzündung.
2. tuberculose bauchfellentzündung.
3. blutspeien (von tuberkeln.)
4. meningitis tuberculosa.

CLASS III.

ORDER I.

1. hitziger oder acuter wasserkopf.
2. rückenmarkentzündung.
5. paraplegie, halbsehalg atraxie progressive veitstanz.
zitterkrampf.
6. (mangebe die art von wahnsinn an.)
monomanie, unsinnigkeit.
melancholic.
kummier, schrecken, &c
falscher croup (laryngismus stridulus.
hysteria.

10. Tetanus (*state cause of the tetanus.*)
Other Diseases of the Nervous System.

always state cause of the convulsions, or other nervous maladies, reported as cause of death, when known.

ORDER II. (*Circulatory System.*)

- | | |
|--|--|
| 1. Pericarditis. | 1. inflammation of the heart (carditis.) endocarditis. dropsy of the heart. |
| 2. Aneurism of Heart.
" of Aorta. | 2. external aneurism, (state what artery, and if subjected to surgical treatment.) |
| 3. Hypertrophy of the Heart. | 3. angina pectoris. syncope. |
| 4. Valvular Disease of the Heart. | |
| 5. Fatty Degeneration of the Heart. | |
| 6. Atrophy of the Heart. | |
| 7. Phlebitis. | 7. varicose veins. arteritis. atheroma. embolism. |
| Other Diseases of the Vascular System. | |

ORDER III. (*Respiratory System.*)

- | | |
|--|---|
| 1. Laryngitis. | 1. oedema of the glottis. epistaxis. |
| 2. Bronchitis. | |
| 3. Pleurisy.
Hydrothorax. | 3. pleuro pneumonia. pneumothorax. diaphragmitis. |
| 4. Empyema. | |
| 5. Pneumonia. | 5. congestion of the lungs. |
| 6. Asthma. | 6. emphysema. |
| 7. Gangrene of Lungs.
Other Diseases of the Respiratory System. | |

ORDER IV. (*Digestive System.*)

- | | |
|--------------------------------|---|
| 1. Gastritis. | 1. glossitis, stomatitis. pharyngitis (see quinsy.) oesophagitis. |
| 2. Enteritis. | 2. duodenitis. |
| 3. Peritonitis. | tuphlo-enteritis. |
| 4. Ascites (from Peritonitis.) | |
| 5. Ulceration of Intestines. | 5. perforation of intestines. |
| 6. Hernia. | 6. (distinguish the following varieties of hernia): inguinal. crural or femoral. umbilical. congenital. ventral. omental. |
| 7. Ileus. | 7. colic, constipation. |
| 8. Intussusception. | |
| 9. Stricture of Intestine. | 9. stricture, from adhesions or bands. stricture from scirrhus (see cancer.) |
| 10. Fistula. | 10. specify the location and nature of the fistula.) |

10. Starrkrampf (gebe ursache und dauer des krampfes an.)
Andere Krankheiten des Nerven Systems.

ORDER II. (*Gefass System.*)

- | | |
|---|--|
| 1. Herzbeutelentzündung. | |
| 2. Herzaneurisma.
Schlagaderaneurisma. | |
| 3. Herzhypertrophie. | |
| 4. Klappenfehler. | |
| 5. Fettige Herzentartung. | |
| 6. Herzatrophie. | |
| 7. Venenentzündung.
Andere Krankheiten des Gefass-systems. | |

ORDER III. (*Respirations System.*)

- | | |
|--|--|
| 1. Kehlkopfentzündung. | |
| 2. Luftröhrentzündung. | |
| 3. Brustfellentzündung.
Brutwassersucht. | |
| 4. Empyem. | |
| 5. Lungenentzündung. | |
| 6. Engbrüstigkeit asthma. | |
| 7. Lungenbrand. | |
| 8. Andre Krankheiten des Rrspirations Systems. | |

ORDER IV. (*Krankheiten des Verdauungs Systems.*)

- | | |
|----------------------------------|--|
| 1. Magenentzündung. | zungenentzündung, schlundentzündung, (vide entzündliche braune.) speiseröhrentzündung. |
| 2. Darmentzündung. | 2. entzündung des zwölffingerdarms. |
| 3. Bauchfellentzündung. | entzündung des blinden darms. |
| 4. Bauchwassersucht. | |
| 5. Darmgeschwüre. | 5. eingeweidebruch. unterscheide die folgenden arten von brüchen. eingeweidebrüche. leistenbruch. schenkelbruch. nabelbruch. bauchbruch. |
| 6. Eingeweidebrüche.
Hernien. | |
| 7. Ileus. | 7. verstopfung. |
| 8. Darmverschlingung. | |
| 9. Verengung der Eingeweide. | 9. verengung durch "binden." verengung durch "krebs." |
| 10. Fistel. | 10. (spezifizire die ortlichkeit und art der fistel. |

10. mundklemme. krämpfe (man bemerke in jedem falle die ursache der krämpfe, wenn dieselbe bekannt ist.)

ORDER II.

- | | |
|---|---|
| 1. herzentzündung.
endocarditis.
herzbeutelwasser-sucht.
hyperaesthesia plexus cardiaci. | 2. aeußerliche aneurisma (gebe an von welcher ader und ob unter ärztlicher behandlung.) |
| | 3. Angina Pectoris. |

ORDER III.

- | | |
|----------------------------|--|
| 1. oedem des kehldec-kels. | 3. pneumothorax.
zwerchfell entzündung.
(pleuropneumonic.) |
| | 5. lungenapoplexie. |
| | 6. emphysem. |

ORDER IV.

- | | | | |
|---|--|---|---|
| 11. Ulcer of the Stomach. | 11. (state if the ulcer had perforated the stomach.) | 11. Magengeschwür. | 11. (gebe an ob das Geschwür den Magen durchbohrt hatte.) |
| 12. Splenitis. | | 12. Milzentzündung. | |
| 13. Hepatitis. | 13. cirrhosis. | 13. Entzündung der Leber. | 13. cirrhose, (granulirte, Leber) gallenstein. |
| 14. Jaundice. | 14. gall-stones. | 14. Gelbsucht. | |
| Other diseases of the Digestive System. | dyspepsia. hemorrhoids. hæmatemesis. melena. | 15. Leber-Krankheit. | |
| | | 16. Hartleibigkeit. | |
| | | Anderer Krankheiten des Verdauungs-Systems. | |
| | | 17. dyspepsie. | 17. dyspepsie. hamorrhoiden. blutbrechen. schwarze krankheit. |

ORDER V. (Urinary System.)

1. Nephritis.
 2. Ischuria.
 3. Nephria (Bright's Disease.)
 1. Diabetes.
 5. Calculus.
 6. Cystitis.
 7. Kidney Disease.
- Other Diseases of the Urinary System.

ORDER V.

- stricture of the urethra not a consequence of gonorrhœa.
5. (state if surgical operations were performed.)
6. gravel, cystorrhœa. hæmaturia. diseased prostate.

ORDER VI. (Generative System.)

1. Ovarian Dropsey.
 2. Metritis.
 3. Uterine Disease.
 4. Uterine Tumor.
- Other Diseases of the Generative System.

ORDER VI.

- orchitis. varicocele. hydrocele. polypus of uterus.

ORDER VII. (Locomotory System.)

1. Arthritis.
2. Joint Disease (state particularly what kind of disease of joints.)
3. Periostitis.
4. Ostitis.
5. Osteo-mylitis.

ORDER VII.

2. synovitis. tumor of bones. softening of bones. caries of bones.
3. necrosis. muscular atrophy.

ORDER VIII. (Integumentary System.)

1. Phlegmon.
 2. Ulcer (location and character of a fatal abscess, ulcer, or tumor, should always be stated.)
- Other Diseases of the Integumentary System.

ORDER VIII.

1. abscess. eczema. pemphigus. rupia. ecthyma. whitlow.

CLASS IV. DEVELOPMENTAL. ORDER I. (Children.)

1. Premature Birth.

CLASS IV.

ORDER I.

- Still Birth.
1. (at whatever period a still-birth occurs, the report to the Bureau of Records should

ORDER V. (Nierend & Blasen Krankheiten.)

1. Nierenentzündung.
2. Harnverhaltung.
3. Bright'sche Krankheit.
4. Harnruhr.
5. Steinkrankheit.
6. Blasenentzündung.
7. Nieren-Krankheit.

8. Andere Krankheiten des Harn-Systems.

ORDER VI. (Geschlechts-System.)

1. Hodenentzündung.
 2. Uterusgeschwulste.
 3. Gebärmutterpolyp.
 4. Uteruskrankheiten.
- Anderer Krankheiten des Geschlechtsknochen und Muskel Systems.

ORDER VII. (Bewegungs-System.)

1. Gelenkentzündung.
2. Gelenkwassersucht. Welche art von entzündung.
3. Periostitis.
4. Osteitis.
5. Osteomyelitis.

ORDER VIII. (Haut-System.)

1. Phlegmon.
2. Geschwür.
3. Andere Krankheiten des Haut-Systems.

ORDER V.

- unwillkührlicherharn abgang.
- verengerungder harn röhre (nicht in folge von tripper.)
5. gebe an, ob ärztliche Operationen angewandt wurden, &c.
6. harngries, blasenatarrh blutharnen.

8. vorstehendrüsen-krankheit.

ORDER VI.

- hodenentzündung. krampfaderbruch. wasserbruch. uteruspolygon.

ORDER VII.

2. gelenkkapselentzündung knochenhautentzündung.
- “ geschwulst
- “ erweichung knochenvereiterung. entzündung des knochenmarks. muskeltrophie.

ORDER VIII.

1. abscess. pemphigus, Blasen-ausschlag. rupia. ecthyma. wurm am finger, &c. ortlichkeit& art eines bosartigen abscesses, Geschwürs, oder Geschwulst sollte immer angegeben werden.

CLASS IV.

METAMORPHOSE KRANKHEITEN.

ORDER I. (Kinder.)

1. Früh geboren.

ORDER I.

1. Bei jeder Fehl-oder Todgeburt sollte im Rapport die dauer der Schwanger-

		<i>state as early as practicable the period of utero gestation.)</i>	
2. Preternatural Birth.	2. <i>the report should state in what respect the birth was preternatural.)</i>	2. Unregelmässige burt.	Ge- 2. Der Rapport, sollte angeben, in welcher Beziehung die Geburt eine wider-natürliche war.
3. Cyanosis.		3. Cyanose.	
4. Spina Bifida.		4. Spina bifida.	
5. Special Malformations.	5. sclerema. imperforate anus. atelectasis of the lungs. cleft palate. idiocy.	5. Missgeburten.	5. sclerema. (atresia ani) lungen-atelectasie. hasencharte. wolf-rachen. gespaltenen gaumen. idiotismus.
6. Teething.		6. Zahnen.	
ORDER II. (Women.)	ORDER II.	ORDER II. (Frauen.)	ORDER II.
1. Chlorosis.	deformed pelvis.	1. Bleichsucht.	deformirtes becken.
2. Childbirth (see Puerperal Fever.)	extra uterine foetation.	2. Kindbett (Fehlgeburt)	extrauterin schwangerschaft.
3. Convulsions (eclampsia in Childbirth.)	phlegmasia dolens. puerperal mania. miscarriage. abortion.	3. Krämpfe. (Krämpfe der Gebärenden im Kindbette.)	tumor albus abortion.
4. Flooding.	turn of life. (<i>fatal maladies peculiar to women should be as accurately specified as any other diseases.</i>)	4. Gebärmutterblutfluss.	puerperal manie. kindbettwahninn. elinacteria
			Rapport gefährlicher Krankheiten die Frauen eigen sind, sollten so genau wie andere Krankheiten specifiziert werden.
ORDER III. (Age.)	ORDERS III. AND IV.	ORDER III. (Alter.)	
1. Old Age.	(degeneration of any tissue, resulting in death, to be specified, as fatty, amyloid, &c.)	1. Altersschwache.	
2. Senile Gangrene.		2. Altersbrand.	
ORDER IV. (Nutrition.)			
1. Atrophy.			
2. Debility.			
CLASS V.	CLASS V	CLASS V.	CLASS V.
DEATHS BY VIOLENCE.		GEWALTSAME TODESARTEN.	
ORDER I. (Accident and Negligence.)	ORDER I.	ORDER I.	ORDER I.
1. Fractures and Contusions.	1. (includes railroad casualties and other modes of sudden destruction of life by accident and negligence.)	1. Contusion und Bruch.	
2. Wounds.		2. Wunden.	
a. Gunshot.		(a.) Schusswunden.	
b. Incised.		(b.) Schnittwunden.	
c. Penetrating.		(c.) Stichwunden.	
3. Burns and Scalds.		3. Verbrennung, und Verbrühung.	
4. Poison, by—	4. the precise kind of poison should be stated.)	4. Gift (von welcher art)	
5. Drowning.		5. Ertrinken.	
6. Suffocation.		6. Erstickung.	
Other Causes of Violent Death.	by explosion of— by lightning. by frost. by snake-bite. by concussion of— by contusion of— by amputation.	7. Andere Ursachen gewaltsamen Todes.	7. durch explosion von— blitzschlag. erfrieren. schlangen-biss. erschütterung von— contusion, von— amputation.
ORDER III. (Homicide.)	ORDERS III AND IV.	ORDER III. (Mordfälle.)	
1. Murder and Manslaughter.	1. (state the implement used, and the actual cause of death, or part of body injured.)	1. Mord und Totschlag.	
ORDER IV. (Suicide.)		ORDER IV. (Selbstmord.)	
1. Wounds (a) Gunshot, (b) Cut, (c) Stab.	2. (state kind of poison.)	1. Wunden. (a) Schiess (b) Schnitt (c) Stichwunden.	
2. Poison, by—		2. Gift.	
3. Drowning.		3. Ertrinken.	
4. Hanging.		4. Hangen.	
		5. Andere Arten von Selbstmord.	
ORDER V. (Execution.)		ORDER V. (Execution.)	
1. Hanging.		1. Hangen.	
{ Sudden Deaths (cause unascertained.) Cause not specified, or ill-defined.		Plotzliche Todesfälle. ursache nicht angegeben.)	
ORDER II., in CLASS V., comprises deaths in battle, consequently it is omitted in civil registration.		Ursache nicht specifizirt oder schlecht benannt.	

TO PHYSICIANS.

Certificates of death should be returned to the Board of Health, with name of the *cause* distinctly written in English or Latin.

The time from attack till death should never be omitted. If the exact period of continuance of the cause or causes cannot be given, let it be stated as correctly as practicable. The complicating or remote causes, together with the time, will henceforth be registered in parallel columns with the first or chief cause of death.

By designating all deaths from the same cause by the same name, and by grouping the statistics of mortality, in accordance with the classes and orders adopted by the chief civilized nations, we secure facility and accuracy of comparisons in the practical study of such records.

Prevention of needless mortality and disease, is an object always in view in the classification, analysis and daily use of such records of the causes of death. Sir Sidney Herbert well remarked that "the grouping of zymotic diseases together seems to facilitate the application of *precautionary measures*." And we may apply the same remark to each branch of the classification which the Metropolitan Board of Health has adopted in its bureau of vital statistics. Such classified arrangements and a definite nomenclature are also essential in all accurate registration and in the practical study of vital statistics.

Whenever a new or special name of a cause of death, not included in this list, is returned in a physician's certificate, it will readily fall into place in the order to which it belongs.

In designating the classes and orders in statistical nosology, Dr. Farr has employed Latinized names, derived from expressive Greek words that every physician will readily recognize. For official purposes and reports all terms are in plain English, and, as far as practicable, causes of death are recorded in our own language by this bureau. Explanatory remarks are interspersed in the columns of English, and also in the German columns, for information and suggestions as to desired specifications. Synonyms in the several languages, may be easily read by their corresponding numbers in the respective classes and orders; but these synonyms are complete, only so far as required for uses of the bureau, and by foreign physicians in records of death.

“ E.”

OFFICE OF THE ENGINEER METROPOLITAN BOARD }
OF HEALTH, NEW YORK, Nov. 1, 1866. }

To the Secretary of the Metropolitan Board of Health :

As engineer of your honorable board, I respectfully submit the following report :

Since entering on the duties of my office, a large number of complaints have been referred to me, and have been endorsed with a recommendation as to the proper structural remedy. It has been my aim to avoid, as far as possible, requiring large expenditures by lessees or owners, and therefore many complaints, referred to me for a structural remedy have only been endorsed as general orders for repairs or cleansing.

Notwithstanding this, the special orders had so accumulated in the month of August, that it was manifestly impossible that they could be executed by the force at the command of the board, if the property holders declined or neglected to do the work. Instead of special orders, therefore, for the connection of premises with sewers, a printed request has been sent to the owners or lessees, with plans of privy, sink and buildings.

Complaints, on which the remedy suggested by the inspector seemed to be inexpedient or doubtful, or expensive, have invariably been examined by myself or by sanitary policeman Brady, attached to my office. On many complaints, between the inspection by the medical officer and the re-inspection, the remedy has been applied by the property holders, and such complaints have been endorsed “ no order.”

Complaints on the condition of the pavements of public streets, sunken lots, street sewers, unsafe and dangerous buildings, have not generally been endorsed for orders, but “ respectfully referred ” to the departments or commissioners having charge thereof, in the cities of New York and Brooklyn ; and in both these cities, and the suburban districts, I have by personal inspection, tried to make myself acquainted with their sanitary condition.

Privies with sewer connections.—Of the special orders a large number have been for the connection, in some form or other, of the premises with the street sewer; mostly for a new privy vault and sewer connection. Agreeably to an early resolution of your board, I reported on a proper system of regulations for the construction of sinks and privies, and drew up a specification for the same to be done by contract, and three propositions were received for the same, which would have materially reduced the price for such constructions. But there was a difficulty in the execution of such a contract, the powers of the board not being considered sufficient to enable it to become a party thereto, and undertake the payment for the work done, without recourse first by the contractor to the holders of the property on which the work was done.

It would add much to the efficiency and promptness of doing work, could it be carried through by the board, as street sewers are constructed by the Water boards, the money being raised by the issue of bonds, and payment made to the contractor, as soon as the work is completed and accepted, and the bonds cancelled as the reimbursements are made by the lessees or owners of the property. There should then be inspectors to insure the proper execution of the work, and no work on any one order, of which the amount exceeds two hundred dollars, to be executed without specifications and contract.

The request which has been of late served on property holders for the "connection of premises with street sewer" will explain briefly the form of privy and sewer connection which I advised in reply to your resolution.

The Brooklyn board of water commissioners have invariably refused permission for sewer connections with the old form of privy-sink; with open walls in which the faecal matter was deprived of the water necessary for flushing, and which were as likely to be a nuisance as a benefit. They, therefore, designed the oval form, figures 1, 2 and 3, and after trial by them it has also been adopted by the Croton board. It must be observed that these vaults are not to be preferred to the common and well-made water-closets, where the occupants of premises are intelligent and careful enough to make proper use of them; but are, at the best, but make-shifts to accommodate an ignorant, filthy, and selfish class, who throw into the hopper ashes, garbage, and all sorts of refuse, which must have a basin for their settlement, to prevent

the obstruction of the sewer pipe. The depth of these basins or vaults might be readily reduced, if the class occupying premises are trustworthy, and the dimensions in plan be adapted to the number of families making use of the same ; it only being requisite that the holes should be entirely over the vault. The circular or oval form of the vault is not only for the convenience in flushing, but is also the simplest support against the pressure of earth.

Privies without Sewer Connections.—In the cities where there is no sewer in the street the oval form, as above, is not only well adapted as it is of sufficient capacity, but will be suitable for connection with the sewer whenever it is laid.

In country districts, where there is no danger of injury from leakage into the wells, the bottom may be omitted ; but in all cases where the vault is to be cleaned by manual labor the privy-house should be placed sufficiently to one side to admit of a cover and access to the vault from the outside. For houses near the wharves, and where there is no sewer, privy-tubs are in considerable use ; nor does there seem great objection to them, as they are of small capacity and require frequent cleaning. The plank slip vault box is well adapted for country districts ; it should be made perfectly tight, disinfected during the summer months with sulphate of iron, lime, or even common earth. It is to be placed on permanent skids, slipped out when full, emptied and cleaned.

Cesspools.—Cesspools should be avoided as far as possible, and have seldom been ordered except where specifically recommended by the inspector. In the city, where there is sewer connection, nothing but a small catch-basin or trap, protected by a grating, is necessary. When there is no sewer, it is questionable whether it is not better to lead the waste into the street-gutter than accumulate filth in a cesspool in the yard, were the gutters well graded, paved and cleaned, very little liquid would remain to become offensive.

In thickly inhabited country districts, where the water-supply is drawn from springs or wells, the streets should be well guttered, and the waste should be discharged into tight cesspools, well covered ; the water being led into the gutter, and the deposit in the cesspools disinfected and removed. In farm districts, with ordinary care in location, there is no objection to privy, vault, or cesspool.

Water-closets.—The complaints against water-closets have been,
[Assem. No. 241.]

in general, either for deficiency of water-supply for flushing, or for some defect in their construction. Both in New York and Brooklyn the head of water in the mains has been steadily decreasing, from an increase in the number of water takers and from excessive waste. A large receiving reservoir and new main have been added to the Croton works, and the Brooklyn commissioners are now laying a 48-inch main from the reservoir; but some other action is necessary. Water should be supplied to the consumers by measure, like gas. It is not the useful consumption of water, but waste, that reduces so largely the head in the mains, and distributes it so unevenly throughout the city. In none of the high tenement-houses is there a water supply at the top of the house. If there are water-closets, they are in the basement, and are used by many families, with no responsibility for cleanliness, and become clogged and a nuisance.

On this account most landlords prefer the privy in the yard. The objection to this is, that the tenants in the upper stories, to save journeys down and up stairs, throw their ordure into the street, or retain it in vessels in their rooms. If the leader pipe be brought to the centre of the house, and the roof so valled as to discharge all water into it, hoppers might, in connection with the leader, without great cost, be put on each floor and for each family; it being only requisite that a tight lid be fitted to each hopper, the flushing of the hopper being done with the family waste or slop water, and the ventilation obtained by extending the leader well above the roof, the water from the roof being conducted into the leader by a branch pipe covered by a flap-valve. In many houses, especially of the poorer class, the water-closet is placed where the space could not be well occupied for any other purpose; some dark corner in the basement, or beneath the stairs, badly lighted and ventilated, and, therefore, ill-kept and offensive.

In Mr. William Mason's house, at Taunton, the privy, without water-supply, is in the centre of the house; the vault is tight and connected with the kitchen flue; the draft from the holes is downward to the vault, and not upward into the interior of the house. By the insertion of a two-inch pipe beneath the seat of a water-closet, and the extension of it to a warm flue, no smell need ever escape into the house, and, with cleanliness, a well-arranged water-closet may be as inoffensive as any pantry. With regard to the number of closets, or privies, for a dwelling house, in proportion to the occupants, it is preferable that in tenement-houses each

family should have an accommodation to itself, and be responsible for its cleanliness. When there are workshops and offices, there should be a closet for every twenty occupants.

Urinals.—A very large source of waste is the continuous flow of water in urinals. To remedy this, all urinals in public or common use should have self-acting cocks, connected with the platforms in front of the urinals. In private houses, it is a very simple plan to hang the seat of the water-closet, and expose the hopper for the urinal. There has been considerable discussion as to the propriety of erecting, in different parts of the cities of this district, public urinals and water-closets. Of this necessity there is no doubt. The question is, where shall they be located, and how shall they be constructed. Buildings could be erected in the few public squares with these conveniences, and of sufficient extent to afford some shelter in cases of sudden rain, with small withdrawing rooms for men and women, which should be under the charge of a keeper, who might be paid sufficiently by the profits on the sale of newspapers, etc., etc.

Traps, Sewer and Soil-pipes.—There have been many complaints of the want of traps, and of obstructions in sewer and soil-pipes. In houses built for speculation, there has been a great deal of what is called "cheap plumbing," the omission of everything not readily detected, whether of furniture or work. There is probably no part of the house in which more care is necessary than in the laying out and executing the plumbing. A defect in plan may injure the working; a defect in work, through open joints, or want of traps, may bring disease and death into the household. In the endorsed complaints no form of trap has ever been designated; any will be sufficient, that has a good water closure. Care should be taken that the trap should never be entirely disused; the water should be occasionally changed to prevent it from becoming offensive, or by evaporation, opening a connection with the sewer. Where on one upright soil-pipe there are closets branching off in different stories, and especially where there is a slop-closet, or when the soil-pipe is the leader, or connected with the leader, the discharge of water from the upper closet or the flow of rain water acts as a piston in the pipe to draw the water out of the traps. Many houses have an offensive smell from this cause, directly after a rain. The functional remedy is very simple, to refill the traps by raising water-closet handles or opening cocks of water pipes; the structural one, to ventilate the soil-trap

so that there may be no such draft or suction, and make waste traps deep. The soil-pipe is the pipe rising from the sewer-pipe in connection with water closets, usually of lead, sometimes of iron; it should be strongly stayed and supported by the wall. All such pipes, as well as all waste and water pipes, should be easy of access for repairs, and have the covers over them movable. By sewer-pipe is to be understood the nearly lying the pipe which is designated in the request for sewer connections. The order has been, when these pipes were complained of, "to remove obstructions and to repair defects," an order more general than usual, since it is only by absolute uncovering of the pipe that the cause could be determined, and the remedy applied without further or more specific order.

Cisterns.—There are many complaints of old cisterns, constructed originally for water-supply, which are now disused, and become receptacles of filth and stagnant water. On such, the order has been to clean, break a hole in the bottom to drain it, and fill with fresh earth or ashes.

Stables.—It has been almost an uniform order on all stables "to construct a manure vault of at least four feet cube in size, water-tight and with a tight cover, and that all the urine should be led into this vault." The urine is readily absorbed by the manure, which, if removed, according to the code, will never become offensive. The waste from the hydrant and watering trough, and from the washing of carriages, should either be led into the street gutter or into the sewer. The floors of stables have been required to be so tight and so graded that all fluids will be discharged into receptacles required. A preferable plan would be, to grade the earth beneath the floor and concrete the same for this purpose. Many stables are connected with street sewers, but this has seldom been required by our orders. When thus connected, the fluids should be collected into a small cesspool, the sewer pipe should be trapped, and the connection with the cesspool protected by a fine grating.

Slaughter Houses.—If allowed in the city, should never be permitted except on a sewered street; and then the cellar or ground beneath them should be covered with concrete, and drained into similar cesspools to those required for stables.

Breweries and Distilleries should, if possible, be connected with street sewers. There are many in the outskirts of Brooklyn, where there are no street sewers, which must depend on some local drain-

age, or system of cesspool. At Morrisania there are very many breweries, especially on Fordham avenue or contiguous thereto; I have recommended here that a street sewer be laid, and that the breweries be connected therewith.

Sidewalks, Curbs and Gutters.—During the first month of my entrance upon the duties of engineer of your Board, complaints of sunken gutters, curb and sidewalk were referred to the street commissioners; but of late the order has been served on the occupants to “relay sidewalk and reset curb and gutter stone to established grade.” The order would seem to be simple enough, and sufficient to remedy the evil. The trouble, especially in this city, has been to find what is the grade established. Undoubtedly, there may have been some grade established for every street, but the record is lost, or if not lost, does not agree at all with that actually existing, and, in many cases, where orders to reset have been served, the difficulty has not been the fault of the locality on which complaint has been made. Both in this city and Brooklyn, the grade of streets should be revised by competent persons, and established, and records deposited in some place where they would be safely kept and easily referred to.

There are many complaints of the leakage of water from houses or lots upon premises adjacent. When the cause is suspected to be from privy or cesspool, the water has been tested by permanganate of potash. But when the water is pure it is very difficult to determine whether it comes from a leak in the water pipe or from the natural drainage of the soil. This can only be determined by actual trial by digging and uncovering. It would seem proper that the Board itself should have power to do this, charging the expenses to the party in fault; but if from natural sources, to be charged to some contingent fund set aside for that purpose.

Tenement-Houses.—There have been many complaints of tenements, as ill-ventilated and over-crowded, upon which it was impossible to make definite orders without reinspection; and the making of plans and specifications for which the force attached to the engineering department has been inadequate. In many cases, the remedial measures required have been so radical that I have hesitated even to recommend them, and have confined myself to simple orders for cutting a few windows in dark bed-rooms, and some few openings for ventilation. Of the necessity of some radical change in the living houses of our poor, there can be no question. The subject has been ably treated in the Sanitary Report

of the Citizens' Association, which, illustrated with diagrams, gives a very fair statement of the condition and form of this class of houses. The moral and sanitary effect have undoubtedly been fully reported upon by other officers of the board, and I can only recommend a few remedial measures. Were plans of new construction always submitted to the Board of Health for its approval, suggestions might, perhaps, be made, which, without increasing the expense of their construction, might improve them in a sanitary view. But it is extremely improbable that six-story tenement-houses, front and rear, on a single lot, can ever be sufficiently ventilated; or that the present profits of such investments can be maintained. The great trouble is, that the population is crowded into too small space; that there are too many human beings to the area, with no parks or public squares for breathing places. The best remedy will be steam railway communication, that will cheaply distribute the population throughout the whole city and county, and across the Harlem river. Mercantile business is driving the population before it in the lower wards, and the sooner it wipes out the crowded tenement-houses the better. For the ventilation of the usual front and rear tenement-house, I know of no more simple and efficacious means than the erection of an independent stair-case between the two houses, connected with neither except by exposed landings, and using the present stair-cases as ventilators to the buildings, with raised sky lights, and hung sash at the sides. If the stair-cases be fire-proof, it will afford a means of escape, and will prevent the recurrence of such calamities as the burning of families or persons in the conflagration of tenement-houses. According to the Code one thousand cubic feet of space is required to be provided for each occupant of a tenement-house. This, although it may not be too much for sanitary purposes, is much more than is to be had in any of the present erections, and is altogether too little if there are no other means of ventilation. By the English law, "No building shall be erected on the side of any new street, which shall exceed in height the distance from the front of such building to the opposite side of such street." Provision is also made for an open space in the rear, of not less than "ten feet from the opposite property, and if such building be two stories in height above the level of such open space, the distance across shall be fifteen feet; if such building shall be three stories, twenty feet; above three stories, twenty-five feet, subject to the modification of the board." With regard to windows, "every

habitable room shall have at least one window, and the total area of window or windows, clear of the sash-frame, shall be at least one-tenth of the area of every such room, and the top of at least one of the windows shall be seven and a half feet above the floor, and the upper half at least shall be made to open full width." "Every habitable room hereafter, built of less than one hundred superficial feet, and without fire-place, shall be provided with special means of ventilation by air-shaft or otherwise."

These provisions seem wise and appropriate, and might be embodied in your Code. In connection with this subject, I might call your attention to the provision in London for public wash-houses and baths for the poor at moderate prices, in which this city is entirely deficient. "Every wash-house to be supplied with conveniences for washing and drying, and the charge for boiler and one washtub, or two tubs with conveniences for drying, 1d. per hour, or 3d. per two hours. Bath-house, bath for one person above eight years old, with one towel, 1d. for cold, and 2d. for warm. Open bathing places for one person $\frac{1}{2}$ d." There seems to be no reason why similar accommodations might not be supplied here. Water is as abundant and cheap, real estate about the same, but fuel a little dearer.

Sunken lots and stagnant water.—My first report to your Board, was on the condition of sunken lots in that part of the Twelfth ward of Brooklyn, where cholera first appeared and was so fatal. Agreeably to your direction, the complaint and report were referred to the street commissioner, and succeeding complaints, both in this city and Brooklyn, have been referred to the same officer. The remedy lay in the common council, and both street commissioners undertook to bring the matter before the respective boards. No effective action has ever been taken, nor any remedy applied, except the culverts lately constructed in the Twelfth ward of Brooklyn, by the sanitary police under the direction of your Board. I have made personal examination of almost every complaint of sunken lots, and almost invariably have found the cause to be negligence of the officer having charge of the grading of the streets, in either putting in insufficient culverts or no culverts at all, across the streets during their construction.

The Brooklyn laws and ordinances require, "In all cases where the common council shall decide upon grading and paving of any street or avenue, they shall cause a sufficient number of culverts or drains to be constructed under such street or avenue as may

be necessary to carry off such surface water of the lands which shed their water under the line of such street or avenue." The laws of this city are not so explicit, but still sufficiently so to give the common council the same power. Notwithstanding this power to make culverts, not only where there was a stream, but even not to obstruct the water shed, the streets have been made dams to enclose and make stagnant ponds of water. I have, therefore, seldom approved an order to proprietors to fill these lots, as the fault was none of their creation, and there seemed to be great doubt whether the mere filling, without draining, would serve a sufficient sanitary purpose. Such ponds or pockets, whether open or filled, have always been considered by medical men as a source of intermittent fever. As an example, I would refer to the district at the southwest end of the Central Park, between Eighth avenue and Broadway, and at the southeast end of the Park, and on the easterly side. A stream commencing west of the Eighth avenue, crossing the corner of the Park diagonally, and thence easterly to the East river, has had culverts made across the avenues and the streets for its flow, but not at sufficient depth to thoroughly drain the district, and many are obstructed. Of the lateral culverts which should deliver the rain fall into this stream, many are broken, all ill made, and some so planned that there can be no flow through them until a pond has accumulated, and the level been raised to the height of the bottom of the culvert. These lots can never be drained by the sewers, as they are much below the established grade of the sewers.

In all the upper parts of the city, and in most of the suburban wards of Brooklyn, as the Eighth, Twelfth, and Sixteenth, there will be found the same complaint of sunken lots, and the same cause of trouble. In the Sixteenth ward of Brooklyn, I found basements, that before the grading of the streets, were dry, and used for household purposes, are now wet and wholly useless. The remedy seems to be simple; that the grading of the streets should be done according to law, and under the direction of intelligent parties.

Streets.—Neither in this city nor Brooklyn, is there a street paved with cobble, which can be considered in even fair condition; all are more or less sunken, out of grade and broken up, due to the careless and improper way in which they have been laid, and negligence in maintaining. If cobble stones are laid uniform in size and form, on a good substratum of sand and gravel, well

rammed and the interstices filled, they make a very fair and substantial pavement. But no care has been taken in culling, and little in preparing the bed. They should be repaired as speedily as possible, or be replaced by Belgian pavement, and in view of the trouble resulting from the defective grade of the gutters, the stagnation of water thereon, and the return of dirt to the gutter after being swept up, it might be advisable to return to the old form of grading streets by making the gutter in the centre. In that case, the catch basins would be placed over the sewer, and any offensive smell therefrom would be farther from the dwellings.

In the country districts there are very few paved streets or gutters, or macadamised roads. From Kingsbridge they are opening and repairing an avenue to Yonkers, but even in this no expense is put on *metaling*. It may be said, as a general rule, that all the roads of the districts outlying New York and Brooklyn, are not equal in character to the demands of the public and the wealth of the population. Repairs are made by digging out side trenches and heaping up the centre. There is no care in the selection of material, and no work done looking to future improvement. The remedy lies, of course, in the local boards of the towns, and not in the Board of Health.

Sewers.—Of the condition of sewers in this city enough has been published to show their defective condition. In the police report of 1865, drawings are given of many of the most defective. The Croton Water Board, as far as has been in its power, has co-operated with your board in constructing new sewers and in relieving old ones, whenever requested by you; beginning with such as have been the subject of most complaint by your inspectors. Unfortunately, owing to differences between it and the Finance department, the construction of sewers is now stopped.

The Brooklyn plan of sewers for that city was perfected in 1858; maps were made and filed, and became the law by which the sewer commissions act, and carry out these plans as fast as, in their judgment, it may be necessary. The sewers were adapted in size and form to the district to be drained, and thus far have been found to be very successful. On examination of what has been or will be done at the close of the year, and by reference to the complaints of your inspectors, and my own observation, it seems reasonable to suggest to the Brooklyn Board of Sewer Commissioners, that the sewer now ending at Fifth street should be carried

on as proposed, to discharge into the East river ; and that such branches, as may be necessary therefrom to relieve in part the Twelfth ward, should be constructed ; that the district bounded by Columbia, Union, and Harrison streets be sewered ; that the district between Underhill avenue, Warren street, Classon and Atlantic avenues, and the district between Classon, Putnam, Nostrand, and Flushing avenues, be sewered ; that River street sewer be extended into the Sixteenth ward, and that this ward, of which more complaints have been made than of any other, be sewered throughout ; and that the small district between South Eighth, Fourth, North First streets and the river, be completed. The success of the system of sewerage in Brooklyn, and the removal of their construction from the hands of the common council into that of the Board of Water Commissioners, has enabled the Legislature to give the construction of sewers in this city, into the hands of the Croton board. They have now held that power since the early part of the year 1865, and have proceeded to make thorough plans of the upper parts of the city which were unsewered, and to design a system for sewer construction in the same. In the other parts of the city, where large and small sewers, sewers with and without a grade, bits of sewerage, and unsewered districts, alternate indiscriminately, the arranging of a complete plan of sewerage has become most difficult. Perhaps no better idea can be given of the way in which sewers have been constructed heretofore, than from the directory of sewers which I have compiled from the plans of the Croton board, taking as example, Broadway, Fifth avenue, and Hudson street ; the lines on the left connecting the names of the streets indicating the portions sewered.

BROADWAY, from 1		FIFTH AVENUE, from		HUDSON, from 139	
Battery place North to		13 Washington square		Chambers, N. to Ninth	
Bloomingdale road.		(57 Waverly place) N.		avenue.	
		to Harlem river.			
Park.	Battery place	Union pl	Waverly place	Park.	Chambers
	Marketfield		Astor place		Read
	Beaver		Clinton place		{ Duane
	Morris		Eighth		{ Thomas
	Exchange alley		Ninth		{ Jay
	Exchange place		Tenth		{ Worth
	Rector		{ W. Eleventh		{ Harrison
	Wall		W. & E. Twelfth		{ Leonard
	{ Pine		W. & E. Thirteenth		{ Franklin
	{ Thames		W. & E. Fourteenth		{ North Moore
	{ Cedar		W. & E. Fifteenth		{ Beach
	{ Liberty		W. & E. Sixteenth		{ Hubert
	{ Cortlandt		W. & E. Seventeenth		{ Laight
	{ Maiden lane		W. & E. Eighteenth		{ Vestry
	{ John		W. & E. Nineteenth		{ Desbroses
	{ Dey		W. & E. Twentieth		{ Canal
	{ Fulton		W. & E. Twenty-first		{ Watts
	{ Ann		W. & E. Twenty-second		{ Broome
	{ Vesey		W. & E. Twenty-third		{ Dominick
	{ Barclay		W. & E. Twenty-fourth		{ Spring
	{ Park place		W. & E. Twenty-fifth		{ Vandam
	{ Murray		W. & E. Twenty-sixth		{ Charlton
	{ Warren		W. & E. Twenty-seventh		{ King
	{ Chambers		W. & E. Twenty-eighth		{ W. Houston
	{ Reade		W. & E. Twenty-ninth		{ Clarkson
	{ Duane		W. & E. Thirtieth		{ Leroy
	{ Pearl		{ W. Thirty-first		{ Morton
	{ Worth		{ W. Thirty-second		{ Barrow
	{ Catharine lane		{ W. Thirty-third		{ Grove
	{ Leonard		{ W. Thirty-fourth		{ Christopher
	{ Franklin		{ W. Thirty-fifth		{ W. Tenth
	{ White		{ W. Thirty-sixth		{ Charles
	{ Walker		{ W. Thirty-seventh		{ Perry
	{ Lispenard		{ W. Thirty-eighth		{ Hammond
	{ Canal		{ W. Thirty-ninth		{ Bank
	{ Howard		{ W. Fortieth		{ (Abington square)
	{ Grand		{ W. Forty-first		{ W. Twelfth
	{ Broome		{ W. Forty-second		{ Jane
	{ Spring		{ W. Forty-third		{ Horatio
	{ W. & E. Houston		{ W. Forty-fourth		{ Gansevoort
	{ Bleecker		{ W. Forty-fifth		{ W. Thirteenth
	{ Dond		{ W. Forty-sixth		{ W. Fourteenth
	{ Amity		{ W. Forty-seventh		{ Ninth avenue
	{ Great Jones		{ W. Forty-eighth		
	{ West & E. Fourth		{ W. Forty-ninth		
	{ Washing tonplace		{ W. Fiftieth		
			{ W. Fifty-first		
			{ W. Fifty-second		
			{ W. Fifty-third		

The construction of sewers in any portion of a street has depended upon the political influence exerted, and the size of the sewer upon the discretion of parties ignorant of the first principles of sewers. Parties at the corners can sewer into the lateral streets, but parties owning central lots have depended on grants for back sewerage through the corner lots, or private sewerage in the streets in front. In Broadway and Hudson street complaints have been made of single parties in the centre of a block, who were compelled to make use of the old privy and cesspool, their neighbors having back or private drainage, whilst they were not able to obtain either, without very considerable extra expense, opposition being made by the same neighbors to the construction of a public sewer. Sewers have, usually, been terminated at the low-water line; and as the streets have been extended to the established bulkhead line, no attention has been paid to the sewers, and they have become choked and obstructed, the sewers

and street-grading being under different departments. To remedy this evil, as well as the great difficulties in regard to sunken lots, and to conduct all these interests with intelligence and economy, it would seem proper that the drainage, grading, paving, and repairing of streets, sewers and water service, should be united in one department, working according to a determined plan; that before the grading of streets, the districts should be thoroughly drained, and that no water-shed should be obstructed. Culverts should be so laid that sewers could be built above them, and not, as often has been the case, of such poor material or design, as cause a settlement in the sewer, and much loss to the city. A grade should be established for the streets, and recorded; and such a grade as would cause the water to flow off freely, and not (as may be found in some parts of Brooklyn) collect the flow at sunken places, from which there is no egress. With regard to the sewers, their construction has also fallen into responsible hands, and complete plans will be made for future work. But with regard to the defective sewers in the old part of this city, the Canal street sewer and its branches, the drainage of the cellars along the wharves and at nearly the line of tide, it seems to me that by far the simplest remedy to remove the obstructions to these old sewers, and to reclaim multitudes of cellars for storage, and cleansing them in a sanitary point of view, is the construction of a belt sewer, on North river as far as Fortieth street, and East river to Thirtieth street, below the low tide level, collecting the waters at the Battery and pumping into the North river. The cost of this pumping would be a very small percentage on the increased rental of the property benefited.

Sewers in the Suburban Districts.—A street sewer has been recommended in Morristania, on account of the number of breweries in the vicinity; but there is hardly a town in the Metropolitan district in which, in some thickly settled portion, sewers are not needed. Around the stations on the railroads a poor population accumulates; and the first view that a stranger has of the river towns is not inviting. The construction of sewers is not expensive. In this city, the construction of a twelve inch vitrified stoneware pipe sewer, complete, with manhole, but without catch-basins, and taking up and relaying pavement, amounts to from \$3.50 to \$4.00 per running foot; fifteen inch, \$4.00 to \$4.50; and eighteen inch, from \$4.50 to \$5.00. Intermittent fever, according to the opinion of the best informed medical authorities,

is due mostly to deficient drainage. Various parts of Staten Island have been complained of as fever nests, but there is nothing in the location or in the soil to prevent these places from being thoroughly drained. If it comes within the provision of the Board of Health to make plans and specifications for drainage and sewerage of the suburban districts, it will be necessary to increase the engineer force. I have made personal inspection of the largest portion of the Metropolitan district, and in but one single locality (the quarry at Hastings) have found any difficulty in drainage. Would the property-holders make a determined effort, take the power into their own hands irrespective of party, and place competent men in the town offices, they would secure good roads, good drainage, more healthy towns, and improve vastly the value of real estate.

Wharves.—Many complaints have been made of the condition of wharves in this city, and a few orders have been approved and served on private holders to clean and repair; but most of the complaints have been referred to the street commissioner, who, not having any funds, has not complied with the requests of the Board. I have examined more than one hundred wharves in this city. Few are in first-rate order, most are dirty and worn, and many are dangerous. In their construction none are equal to the requirements of the commerce of this city; they are either constructed of piles and cribs, or piles alone, and are temporary structures, needing constant repair. Stone piers sunk in caissons, with stone bridges between and paved, with only the fenders and mooring piles, of wood, would cost more at first, but would probably in the end be found the cheapest. The bulkhead line should be a stone wharf, and there should be a clear passage along the face of the bulkhead. At present, with crib-work projecting out from the bulkhead, eddies are formed, in which many of the sewers discharge, and become mere offensive cesspools.

Before closing this report, it may be proper to call attention to certain matters, which, although not made the subject of complaints by the inspectors, are perhaps within the province of the Board to remedy. Sections 125 and 126 of the Health Code declare, "every such person shall keep the sidewalk free from obstructions," "nor shall any person block up or obstruct any street or place." In building or making repairs in Broadway, it has been a common practice to occupy one-third of the street with building material, and this often for months in succession. By

the construction of a covered bridge across the sidewalk, and a derrick above the same, all the earth excavated may be delivered directly into carts, and material removed from or deposited as required within the line of the lot, without obstructing sidewalk or street.

Having thus briefly reported on the more important matters coming before the Engineer's department, I would, in conclusion, suggest that its usefulness and efficiency would be very much improved by the introduction of the contract system for the execution of the large orders, while the smaller ones might be more promptly done by a small force of workmen attached to the department.

Respectfully submitted,

WILLIAM E. WORTHEN,

Engineer, Metropolitan Board of Health.

“ F. ”

OFFICE OF THE ATTORNEY,
METROPOLITAN BOARD OF HEALTH, }
NEW YORK, *November 20, 1866.*

To the Secretary of the Metropolitan Board of Health :

I entered upon my duties as attorney of the Metropolitan Board of Health on the 7th day of March, 1866. A considerable period was necessarily occupied in arranging the system to be pursued, and in preparing the proper blank forms.

But, on March 14th, I was enabled to present to the Board for its approval 116 orders for the abatement of nuisances. The system then inaugurated has, with slight modification, been pursued to the present time. As now existing, it is as follows : The sanitary superintendent forwards to me all such reports of the inspectors as seem to him to furnish good grounds for the action of the Board. In many cases, however, he has previously, by letter, called the attention of the parties interested to the evils complained of. In this class of cases, I only receive from him the reports showing the evils which have not been voluntarily remedied after such a letter. All reports received by me are carefully examined, and the form of order prepared in draft for the action of the Board, if such a course seems to me the proper one. In many cases, however, no order is made, either because the evil complained of is not within the powers of the Board, or a remedy has already been applied. Many reports, too, are referred to the proper authorities of the city governments of New York and Brooklyn. Among the latter are complaints as to streets and sewers, and in some cases sunken lots. After the orders have been presented to the Board my supervision over all of them which are made under the second clause of the fourteenth section, in strictness, ceases. They are properly served, and, if not complied with within five days, are executed under the direction of the police without further action by the Board. As to orders made under the first clause of section fourteen, the course is different. After three days from the date of service of the original order is expired, the premises

are again examined by the sanitary inspector to see if the evil has been remedied, and, on his report, a final order, in the original, or in a modified form, is made and presented to and passed by the Board.

So far as I have seen, the law, as a whole, answers the purposes intended very successfully, and there have been found very few instances where further legislation seems absolutely necessary. There are some, however, where it is imperative. The most important of these, relates to the collection of moneys expended in executing the orders of the Board. As the law was originally introduced into the Legislature, it made all such expenses a lien upon the land, to be enforced in the same manner that mechanics' liens are. By the system which the present law superseded, a similar lien was given in the city of New York for all work done under the orders of the city inspector, and there is manifest justice and importance in giving one under the present system. As the law now is, the Board, or persons executing work under its orders, are obliged, in every case in which the expenses are not voluntarily paid, to resort to suits, which are tedious and expensive, and which, not unfrequently, fail to collect the money by reason of the irresponsibility of the persons sued. In other cases, the owners of the land are absent or cannot be ascertained. In all these cases, the mechanics who execute the work must lose their money, or, what will more generally be the case, the Board must pay the expense, which will thus become a charge upon the whole body of the tax-payers, instead of the persons whose neglect renders it necessary, and who ought to pay it. There is no injustice in imposing such a lien upon land, for, if the contract between the owner and his tenants is such that the tenant ought to pay expenses of this nature, the owner has a prompt and effective way of enforcing collection; of course, provision should be made for discharging the lien on giving the proper bond, when he desires to dispute his liability.

The law, as it now stands, makes the work done a lien upon the rent due from tenant to landlord, but specifies no means of enforcing the lien, and in some cases where the tenants have, after notice, paid their rent to the employés of the Board, on account of expenses incurred in the premises, they have been dispossessed for non-payment of the same rent to the landlord. While I have no doubt that such a decision is contrary to the intent of the Legislature, I would suggest that the law should, in this respect, be

made more definite, and the means of enforcing the lien upon the rent be indicated.

In this connection I would also suggest that a provision should be made, allowing service of orders and process upon agents who have charge of property and collect the rent. Certain agents persistently refuse to comply with the orders of the Board, and also to disclose who their principals are, while others represent non-resident owners. As such persons have full control of the property and its income, there is no injustice in allowing papers relating to the property to be served on them.

Another amendment of the law that is imperatively needed is one that shall, in some manner, allow the expenses of any work done to be assessed equitably upon the property actually benefited. There are many sunken lots, ponds, and marshes, within the district. To order these filled up or drained, at the expense of the actual owner, would often be most inequitable. The expense would often exceed the value of the land, while the entire benefit accrues to those owning land in the vicinity.

Again, many of the sunken lots have been made unhealthy by the municipal authorities building streets in such a manner as to dam up the natural flow of water. In such cases the expense of remedying the evil should be borne by the city, which caused it, and not by the unfortunate owner of the lot. In other cases the only possible remedy is by conducting a drain across the land of an adjoining owner, whose own premises are in a good condition.

The remedies for enforcing a compliance with the law requiring reports of births, deaths and marriages are defective, especially those for securing true reports of the causes of death.

There is also some ambiguity in the provisions relating to punishment for violations of the code of health ordinances.

Besides these amendments, which seem to me necessary to render the law more perfect in its action, there are some others which relate to an extension of the powers of the board, which I venture to suggest as proper.

Thus, it seems to me, that the whole matter of street cleaning, and of the removal of offal and night soil, should be properly in the hands of the Board of Health. Accompanying these should be the control of all matters relating to the cleanliness and surface of the streets, other than paving and repairing, matters which are now on the border between health and police powers, but which

should be placed beyond dispute within the jurisdiction of the Board of Health. The existing contracts for cleaning streets, and removing night soil and offal, cannot perhaps be touched; but when any new ones are to be made, the power to make them should be placed in your hands.

The present contracts in the city of New York, if properly carried out, will accomplish their purpose, though probably at an unnecessary expense; but the whole system in Brooklyn is defective. Contracts for street cleaning are made by wards, but are rarely properly made or performed. The removal of garbage is defectively, if at all, provided for, while an existing contract gives to one person the right of removing all night soil from the city. The validity of this contract is disputed, and the whole matter is in an almost inextricable confusion, from which legislative action can alone relieve it.

Again, the cities of New York and Brooklyn are often unable to execute the orders of the board with reference to their property for want of funds. Some legislation should be had, which would enable the board to execute the orders itself, and to assess the expense upon the city, or would enable those cities to raise funds whenever they are ordered by the board to do work.

I think it would be well if the code of health ordinances were expressly recognized as valid by the Legislature.

The history of the past summer must have convinced every one that some restraint ought to be placed upon the freedom with which injunctions are granted by the courts, especially in their application to public officers and boards. The evil is too obvious to need any comment. The remedy is perhaps more difficult. I think, however, it is to be found in an extension of the existing law which forbids an injunction to be granted against State officers, except under certain restrictions. I would forbid the granting of any restraining process against any board appointed by the Governor or the Legislature, except after due notice to such board. No court but the Supreme court should have such power, and then only in the district where the restraint is to be imposed. If besides this there was given a satisfactory preference to such cases, the evil would be greatly diminished.

With reference to cleaning the streets, the board should have some power to do that continuously where the contractors fail to do it. As the law now is, the board may order a particular street to be cleaned, and if this is not done, may do it at the expense of

the contractor, but there their power ends ; they cannot prevent them from again becoming dirty. They must wait till they actually become so, and then go again through the same process.

Indeed, the board has no *preventive* power. It may order a vacant lot cleaned to-day, but though it is obvious that it will become foul again within a week, they cannot, by fencing or otherwise, take measures to prevent such a result. In the same category should, perhaps, be included the power to order improper habitations vacated. An order may, it is true, now be made in each case, but it would be far better if the power were expressly given to the board to operate by general rules in this respect.

The courts have greatly interfered with the execution and the orders of the board, and have imposed great labor upon the counsel and attorney. The first intervention of the courts was by Judge Barnard. On May 7th, he granted an injunction forbidding the execution of orders requiring the removal of the stands and stalls on the streets and sidewalks around Washington market. The board claimed the right to issue those orders under its general health powers, and under the amendment of section twelve, which in express terms gave the board power over all obstructions in the streets.

A motion was at once made to dissolve the injunction. It was heard by Judge Ingraham, on June 29th, and the motion denied. An appeal from this decision has been taken and argued, but no decision has been rendered. Without criticising the opinion of Judge Ingraham in detail, I may say that it avowedly rests on a construction which greatly limits the actual language of the law, and nullifies an amendment made with the avowed intention of meeting precisely such cases. I shall be greatly surprised if the decision is not finally reversed. On May 22d, a similar injunction was granted as to the stalls around Fulton market, and on July 12th, another one as to a single stall near Franklin market. In all these cases, large portions of crowded streets are occupied by permanent structures placed there by the consent of the common council. These structures are in many cases used for purposes wholly foreign to the true object of a market. That they are obstructions in the street, placed there without competent authority, can hardly be disputed. If the common council has power to permit any one to practically close one portion of a street, it is quite time that their powers were curtailed.

On May 28, Judge Jones, of the superior court, granted an

injunction forbidding the board to execute an order which required one Reynolds, the proprietor of an establishment for making lime from oyster shells, to so change his mode of conducting his business that no offensive odors should escape from it. The evil was alleged by the board to consist principally in the burning of animal matter with the shells. The case was argued June 27, the constitutionality of the law, as a whole and in detail, being attacked by the counsel for the plaintiff. Judge McCunn decided to continue the injunction, though affirming the entire constitutionality of the law.

From this decision an appeal has been taken and argued, but not decided. On a motion recently made to settle the issues in this action, so as to refer to a jury, the question whether Mr. Reynolds' establishment was a nuisance, Judge Barbour refused the motion on the express ground that the decision of the Board was final, and that no court could interfere with it by injunction.

Early in June, the Board, in connection with the Commissioners of Quarantine, took possession, with the owners' permission, of certain premises at Seguine's Point, for the purpose of there keeping, under observation, persons arriving at the port of New York on vessels on which cholera had existed. An injunction was procured by certain inhabitants of Staten Island, who claimed that such use of any portion of Staten Island was illegal.

The injunction, granted by Judge J. J. Barnard, was continued by him after elaborate arguments; an appeal was taken and has been argued, but not yet decided. If the law is, as held by Judge Barnard, there is an imperative necessity for its amendment.

About the same time an injunction was obtained by the inhabitants of Gravesend, forbidding the occupation of Coney Island for a similar purpose. This action was, however, subsequently discontinued by the plaintiffs.

The month of July was fruitful in injunctions, principally in favor of fat-boilers. The first one of this class was granted by Judge Brady, of the Court of Common Pleas, July 16. After argument it was dissolved by Judge Brady on July 30. He accompanied his order by a brief opinion, which contained the first encouragement that proceeded from any court, of the efforts of the Board of Health, and also the first appreciation of the scope and meaning of the law. Another similar injunction was dissolved by the same Judge a few days later.

Judge McCunn, of the Superior Court, also granted during the

latter part of July, four injunctions in favor of fat-boilers, which, after argument, were dissolved by him during the following week, while in another case he refused to grant an injunction. The result of all these decisions, was to subject the fat-boilers fully to the orders of the Board. In the hope that they would voluntarily comply, and so change their mode of doing business as to render it inoffensive, the Board waited patiently for several weeks ; but as there was no improvement, on the 17th of August I procured a warrant for the arrest of Christian Gies, for a misdemeanor in disobeying the orders of the Board. After several adjournments the case came up for hearing at Special Sessions, before Justices Dowling and Kelly, on the 8th of September. The prisoner was convicted, and, to his obvious dismay, sentenced not merely to pay a fine, but to 60 days confinement on Blackwell's Island. His counsel at once endeavored to procure his release, and on three different occasions, brought him before Judge Sutherland, of the Supreme Court, on *certiorari* and *habeas corpus*. I was allowed to appear on behalf of the people; the case was carefully argued, the application being rested on constantly varying grounds; but the motion to discharge the prisoner, or to admit him to bail, was refused each time, Judge Sutherland expressing the opinion that the appellate court would certainly not interfere with the conviction. Subsequently, by some proceeding of which I had no knowledge, Gies was discharged on bail by Judge Barnard. On the night of the day that Gies was convicted, his brother was arrested in the act of boiling fat at Gies's place. He stated that he was so doing by his brother's directions. He elected to be tried by General Sessions, but his trial has not yet taken place.

The result of these proceedings was practically to put an end to the nuisance of fat-boiling.

On June 23d, Judge Cardozo, of the Court of Common Pleas, granted an injunction forbidding the enforcement of certain portions of the Code of Health Ordinances, which related to cattle-driving in the streets, and to butchers generally:

A similar injunction was subsequently granted by Judge Barnard, of the Supreme Court. The case in the Common Pleas was most elaborately and exhaustively argued before Judge Daly, who, on September 10, rendered a decision in favor of the Board.

The opinion delivered by him was very learned, and contained the ablest examination of the law which has been rendered. It established the validity of all those portions of the ordinances

which relate to matters of health. Judge Barnard subsequently adopted this opinion as his own.

The last mentioned decisions were very important, as they rendered it possible to put a stop to many abuses by the strong arm of the criminal law. Since they were rendered, arrests for violation of the Code have been quite numerous, and, as a general thing, the police justices have been found ready to second the efforts of the Board. This is particularly true of Justices Dowling and Kelly, who hold the Court of Special Sessions. In the case of Gies, already referred to, Judge Dowling, in passing sentence, declared it to be the intention of the court to uphold the Board in every way in its power, as he regarded the law as a most salutary one, made for the benefit of the poor man. Experience has shown that these were not idle words. Most persons arrested, however, elect to be tried at the General Sessions. No one who has so elected, has yet been tried.

In August, Mr. Coe, who, carried on a manufactory of superphosphate of lime for fertilizing purposes at Hunter's Point, procured an injunction forbidding the Board to interfere with his business. This was supported by a considerable array of scientific testimony to the effect that his business could not be injurious to health. It was met, however, by testimony showing that its actual effects were injurious in the extreme. The case was argued before Judge Sutherland, who decided in favor of the Board, and dissolved the injunction.

In October, two injunctions were granted in the Superior Court, forbidding the enforcement of the provisions of the Code as to shell-burning. They have not yet been disposed of.

A shell-burner, in Brooklyn, has recently procured an injunction from Judge Gilbert, of the Supreme Court.

I have gone into this lengthy statement for the purpose of showing how the operations of the board have been cramped and thwarted at every turn. Each of these cases has necessitated the preparation of numerous affidavits to show that the conclusions of the board were, in fact, well founded. It has been no easy matter to procure these affidavits, for "what is every one's business is no one's," and persons were often unwilling to incur the hostility of their neighbors by making affidavits against them, though they were very vigorous in their private complaints to the board. Moreover, in every case it was contended, that the evil results shown to the board did not proceed from the place attacked,

but from some other cause. In every case, without exception, the owners and employes swore that these establishments were in no way unhealthy, and, as a general thing, averred that they were beneficial to health. In all these cases, the representatives of the board maintained the ground that the action of the board in deciding whether a business or place was a nuisance, was final, and that their decision could not be interfered with by the courts by injunction. But the judges, though never distinctly denying this position, seemed unwilling to adopt it, and where they decided in our favor (which for several months none of them did) they placed their decision, not on the ground that the conclusion of the board was final, but that it was shown by affidavits to be correct. No decision has, however, been rendered, inconsistent with the position of the board, except that of Judge McCunn in the case of Reynolds, for the decision in the Seguire's Point case turned on the construction of the statute law, while the market cases were placed on the ground that the board had no jurisdiction in the matter. Though some portion of Judge Daly's opinion in the cattle-driving case, tended to uphold the views of the board in this respect, and though Judge Brady had previously intimated that he was of the same opinion, it was not till the decision of Judge Barbour, on the motion to settle issues in the Reynolds case, already referred to, that any judge ventured to take the position, which is, I believe, the correct one, namely, that where the board acts after giving the party affected an opportunity for a hearing, its decision as to whether any particular business or place is injurious to health, is final and conclusive, and cannot be controlled by any court, though its proceedings, like those of every inferior tribunal, may be reviewed on *certiorari*. I believe this to be the view which was intended by the law-makers, and which is a necessary feature of every health law. Otherwise, I can see no use for a board of health. If its decisions upon matters of facts are to be controlled by the courts, better to leave the matters to the courts in the first instance. The board must act within its jurisdiction, but, when acting within that, its decisions are final. The hesitation of the courts to adopt this view has proceeded, I believe, in a great measure, from the idea that the powers conferred on the board are not only extraordinary, but unprecedented. I feel sure that this opinion is incorrect. A reference to the annexed examination of the former laws, which I presented to the board in July last, will show that they have contained all the powers conferred

upon the present board, and have in many respects not accompanied them by as many safeguards for the citizen as the present law. The peculiarity of the latter is, that it concentrates in one board, powers which were formerly distributed among several boards and officers, and that the board is now composed of persons who do not hold their offices directly by the suffrages of those who are necessarily the subjects of its strictures.

In one respect the people of the district have not aided the board as they might. They have neglected to help themselves, though they have constantly called upon the board to help them. This has been, I fully believe, the result of ignorance and inadvertence. Complaints are constantly made by people that their neighbors violate the law, or the ordinances, in this or that way, and the complainants expect the board to take up the case and prosecute it. They seem not to be aware that it not only was never intended, but is physically impossible for the board to be represented in every court in the district, and to prosecute all the complaints made to it. If their neighbor assaults them with his fist, they go at once before a magistrate and make a criminal complaint against him, thus setting the law in motion themselves. But if their neighbor assaults them with a noxious smell, they run to the board, and expect instant relief. Citizens must take some trouble themselves. There are hundreds of offenses against the law or the ordinances, which every citizen has in his power to punish through the courts.

The intervention of the board should be called for, only in the more weighty cases, where a noxious business is carried on, or premises kept in an unhealthy condition, or where there is something for which the only remedy is the order of the board.

Very respectfully,

GEO. BLISS, JR.,

Attorney, Metropolitan Board of Health.

HISTORY OF THE HEALTH LAWS

OF THE

STATE OF NEW YORK.

To the Board of Health :

The impression seems to prevail quite generally that the powers given to the Metropolitan Board of Health by the act creating it, are wholly unprecedented in the history of the State. This impression would be harmless, were it not that interested parties avail themselves of it to clamor against its constitutionality, and to appeal to the courts to impede, if not to wholly stop its operation. These appeals, though not thus far so successful as their originators hoped, have certainly availed to induce the courts in some cases to curtail the sphere of the Board's operations, and to interfere with its decisions. As one of the judges has said, extra-judicially, "If it is possible to strip the law of some of its obnoxious and unprecedented features without impairing its constitutionality, it would, in my opinion, be the just and fair course," while all the judges seem to approach its consideration with fear and trembling. I have been led by this state of things to examine into the history of the health laws in this State. A brief sketch of the former statutes upon this subject may be at once interesting and instructive to the Board. I think it will show that they contain the germ and principle of every feature of the present law that has been attacked, while many of the powers granted by them are far more sweeping than those now conferred, and could be exercised with far less regard to what are called the rights of property and the rights of the citizens (terms which are interpreted by interested parties to mean the right to do as you choose) than at present.

The first health act which I have found was passed May 4, 1784, forming chapter 57 of the laws as published in 1 Greenleaf, page 117. It is entitled "An act to prevent the bringing in and spreading of infectious distempers in the State," and is purely a quaran-

tine act, its provisions giving the Governor (or the person administering the affairs of the government, as he is usually styled in the earlier acts) the power to appoint a physician to inspect all vessels, being apparently the origin of the present office of health officer. The next act was passed March 27, 1794, and is to be found in 3 Greenleaf, page 144, chapter 53. Its title is "An act to amend an act, entitled an act to prevent the bringing in and spreading of infectious distemper in this State." This act, while also a quarantine law, adds a provision (section 2) allowing persons infected to be sent out of the State, and for the first time introduces that broad discretionary power which constitutes a necessary ingredient of every health law, by giving the Governor power "to do every other act and thing which may be thought necessary to carry into effect the object of this and the act aforesaid." On April 1, 1796, there was passed "An act to prevent the bringing in and spreading of infectious diseases in this State" (3 Greenleaf, 305, chapter 38). This is both a quarantine and a health law, and the first that I find that contains provisions relating to internal health, save as regards its protection from disease introduced from without. It provides for the appointment of the health officer and seven commissioners of the health office. It gives for the first time a power to destroy bedding and clothing, a power which has been retained, I think, in every law passed since; a power that is to be exercised, not when the courts think proper, but whenever the health officer "shall judge it necessary to prevent infection." For the first time, too, appears the principle of giving force of law to a proclamation of the Governor. He is by this act given power to forbid or regulate by proclamation intercourse with an infected port. But the next power given by this act is even more worthy attention, and deserves to be quoted verbatim: "It shall be lawful for the mayor, alderman, and commonalty of the city of New York, in common council convened, from time to time, as they shall judge advisable" (not as the courts judge) "to make by-laws, ordinances, rules, and orders for filling up or raising, or for reducing or levelling any lot or lots within the said city, and for cleaning and scouring the streets, alleys, passages, curtilages, yards, cellars, vaults, sinks, and other places within the said city, and for regulating all manufactories of soap, candles, vellum, glue, leather or starch, and all other manufactories, and all works, trades, or business causing noxious effluvia or vapor, in respect to the manner in which the places or spaces within the limits of said city

where such manufactories, works, trades, or business shall be carried on or used, and whereby to preserve general health in the said city, and removing and destroying all offensive or putrid articles or substances which may be stored or otherwise collected, and generally for preventing all the nuisances within the said city, under such penalties of fine and forfeiture as shall be reasonable." Here is our fourteenth section, our code of health ordinances, our street-cleaning commission, all in one. Fat-boilers, shell-burners, and all are comprised in a single section. This act provides that where absolute removal is ordered compensation shall be given, but only in cases of removal. The act of May 4, 1784, except a single section, and the act of March 27, 1794, as far as it relates to New York city, are repealed by this act. The next act, passed February 10, 1797 (3 Greenleaf, 367, chap. 16), is entitled "An act to amend the act entitled an act to prevent the bringing in and spreading of infectious diseases in this State." By this act three persons are appointed commissioners of the health office of the city of New York, with whom the health officer is joined. It provides, among other things, that "it shall be lawful for the said commissioners and health officer, or a majority of them, from time to time, as they shall judge advisable"—their own discretion again—"to make and execute rules and orders for cleaning and scouring the streets, alleys, passages, carriage-ways, sewers, yards, cellars, vaults, sinks, and other places within the said city, and for removing all offensive or putrid articles and substances which may be stored or otherwise collected within said city," the expense of executing these provisions to be borne by the city. But here is a passage which will make our worthy president's eyes water: "From and after the 1st day of July next, no person shall dress sheep or lamb skins or manufacture glue, nor shall any soap-boiler, tallow-chandler, or starch-maker, or maker or dresser of vellum, carry on any of the processes or operations of the said trades which produce impure air or offensive smells, such as trying or melting of fat or tallow, boiling soap, fermenting grain or other substances for starch, washing fermenting, or oiling skins for vellum at any place within the city of New York south of the south side of Grant street, and of the south side of the said street continued until it intersects the easterly side of Mulberry street, and south of the west line from the intersection aforesaid continued to the Hudson river." This act provided for paying to those who were compelled to remove the expense of so doing. The same year, March 28,

1797, this act was amended by a remarkable law to be found in 3 Greenleaf, 433, chapter 57. This commences by reciting that, "Whereas, it is represented to the legislature that there are certain manufacturers of soap and candles in the city of New York" (obviously the Allan Hays of those days), "whose works are so situated, and whose business is so carefully managed as neither to endanger health nor to be offensive to their neighbors," and then gives the governor and two of the commissioners of the Health Office power to grant such persons permits to remain, but the permits to be revocable. They are also authorized to grant similar permits "to such starch-makers whose manufactories are not situated to the southward of fresh water." Then follows this proviso, worthy the attention of the inoffensive men of Abattoir Place. "Provided, nevertheless, that no fallow shall be rendered within the limits prescribed by the act above mentioned, from May 15 to November 1." Another section explained that by Grant street in the original act, Grand street is meant, and that Mulberry street is referred to as it is delineated on the map recently published by David Longworth. When we reflect that as late as 1800 "the city proper was bounded on Broadway by Anthony, on the North river by Harrison, and on the East river by Rutgers street, and that even within these limits the houses were scattering and surrounded by large gardens and vacant lots;" that the farm houses on Bowery lane extended as far as Broome street, the fields and orchards on either side reaching from river to river; "that there was a high hill at the junction of Broadway with Anthony street, and that this descended precipitously to the arched bridge at Canal street, thus forming a valley, to the north of which rose another high hill falling off abruptly to a pond in the space between Broome and Spring streets, through which Broadway was filled up and prolonged;" when we remember these things, we shall have no hesitation in saying that the Grand street of 1798, below which none of these offensive trades could be carried on, was at least equivalent to the One Hundredth and Sixth street of the present day. These acts were passed after the yellow fever outbreak of the fall of 1795, but before the far more fatal epidemic of 1798, when 2,066 persons died in a few weeks in the city, out of a population of 55,000, and this, too, though (as a historian says) "all who could, fled the city, the stores were closed, the business streets deserted, and for many weeks the hearses that conveyed the victims of the pestilence to their last homes, were undisputed possessors

of the streets of the city." The next act was also passed prior to the epidemic of 1798. It is chapter 65 of the Laws of 1798, passed March 30, in that year, and to be found in Andrews, page 403. It is entitled "An act to provide against infectious and pestilential diseases." It provides for the appointment of commissioners of the Health Office, of whom the Health Officer is to be one. It re-enacts the provisions of the act of 1797, as to making and executing rules and orders "as they shall judge advisable" for "cleaning and scouring" generally, but imposes the expense upon the owners instead of upon the city, as the act of 1797 did. This is, I believe, the first act in which the principle that has prevailed ever since, of imposing the expense of cleaning upon the owner of the property cleaned, is introduced. The same act of 1798 provides "that whenever the city of New York or any part thereof shall be annoyed or rendered foul by any manufactory, trade, work or business, producing noxious vapors or highly offensive smells, or by any place where any noxious or putrid substances shall be stored or collected within said city, it shall be the duty," not the right but the duty "of the said commissioners, or a majority of them, if in their opinion the public health or that of individuals shall be endangered thereby, to proceed forthwith to make due inquiry and strict examination respecting the same." Power is given them to make forcible entrance if refused. "And if the said commissioners, or a majority of them, shall judge any such manufactory, trade, work, business, or repository to be carried on or kept in such manner as to be a nuisance, they shall declare it to be so in writing to the owner or proprietor thereof, or in his absence, to such workman, clerk, keeper, or one of the family as they may find on the premises, and at the same time shall require the removal, abatement or discontinuance of the said nuisance, as the case may require, within a time to be limited in the said writing; and if, on the expiration of the said time, the same order shall not be complied with, the mayor or recorder, are, on application, required to issue a warrant to the sheriff requiring him to cause to be removed, abated or discontinued such nuisances forthwith and without delay; and the person to whom such declaration and requisition shall be made, shall, besides, for not complying therewith, be considered as guilty of a misdemeanor." This law contains various quarantine provisions, and allows bedding and clothing to be destroyed. It is the first one, I believe, which requires practicing physicians to report. It also contains a pro-

vision to be found in other laws, that the remedies given by it shall not be construed as interfering with the common law remedies as to nuisances. It repeals the laws of May 4, 1784; of March 27, 1794; April 1, 1796; February 10, March 6, and March 30, 1797; being the several laws to which I have already referred.

The next law is that of April 7, 1800, being chapter 120 of the laws of that year. It relates exclusively to quarantine, but imposes restrictions upon the introduction into the city of cotton, hides, coffee and peltry.

In 1804 two acts were passed, one on February 8 (chap. viii, 3 Webster, 469), and one on April 9 (chap. xlix, 3 Webster, 471). The former relates to the cities of Albany and Hudson, which are the only places besides New York named in the earlier acts, and then always with reference to their communication by vessels to the latter city. It is substantially a quarantine act, as is that of April 9.

On March 30, 1801, "an act to provide against infectious and pestilential diseases," was passed. It is to be found in 1 Kent and Radcliff, 361, where the chapter is given as LCII, probably an error for XCII. This act does not seem to be referred to in any of the editions of the "Index to the Laws." It provides that there shall continue to be a health officer under the superintendence of the commissioners appointed by the Governor. Besides the usual quarantine powers, it provides for reports of sickness by physicians and boarding-house keepers; imposes restraints upon the introduction of cotton, and upon salting provisions; authorizes the destruction of bedding and clothing, and the removal to the Marine Hospital of any persons or things that have been exposed to infection. In its provision as to internal health, it substantially repeats the law of 1798, already referred to. No other act was passed till April 8, 1811, when an elaborate act, forming chapter 275 of the laws of that year, was passed. It provides that there shall continue to be a health officer under the superintendence of a Board of Health, and three commissioners appointed by the Governor. Though it repeats many of the provisions of former laws, it contains none that I desire to call attention to, except one allowing any cargo that is putrid, "or in their opinion dangerous to the health of said city," to be destroyed. The next act, that of April 14, 1820 (chapter cccxix), is entitled "an act to provide against infectious and pestilential diseases." It establishes a board consisting of such persons as the mayor,

aldermen, and commonalty in common council convened, shall, from time to time, appoint, and of the health officer, resident physician, and a health commissioner appointed by the Governor. Sections two to thirty-four relate to quarantine, and resemble very much the present law upon that subject. The sixteenth section goes beyond any prior act in allowing the removal or destruction not only of bedding, clothing, and cargo, but of "any other matter or thing that may be putrid or, in their opinion, dangerous to the health of the said city," while the twenty-fifth section allows "persons sick of yellow, billious, malarious, or other infectious or pestilential fever, and all things within the said city which, in the opinion of the commissioners, are infected or tainted," to be removed to the Marine Hospital. Physicians and boarding-house keepers are required to report, and salt provisions, hides and cotton may be removed at the owner's expense. The Board is authorized to appoint health wardens, who are empowered (section 35) in the day time to enter into and examine all dwelling-houses, stores, buildings, apartments, lots, yards and inclosures of every description within the said city, whether the condition thereof or anything therein contained may be prejudicial to the public health, that such measures may be taken as may be required to preserve the health of the inhabitants of the said city. Prior acts are repealed so far as inconsistent, and common law remedies used. March 21, 1823 (chapter vii.), another act with the same title as the last was passed. It seems to make the commissioners subordinate to, instead of members of, the Board; devotes thirty-six sections to quarantine, introducing rags for the first time among cotton, hides and skins, as things to be particularly guarded; gives authority to make rules and regulations as to intercourse with infected places, which all judges and sheriffs are required to enforce, while the Board is to "exercise all such other power not inconsistent with the Constitution of this State or the United States, as the circumstances of the case may require, and as shall, in their judgment, be most conducive to the public good with the least private injury." They are to do this whenever any person is reported to them as afflicted "with contagious or infectious disease." They are, furthermore, authorized, at any time, "to give all directions and to adopt all such measures as, in their opinion, may be necessary to cleanse or purify all such dwelling-houses, stores, buildings, apartments, lots, yards, inclosures and places, and also to do or cause to be done everything in relation

thereto which, in the opinion of the Board, may be proper to preserve the health of the inhabitants of the said city." "And any person who shall violate any order or direction of the Board shall be deemed guilty of misdemeanor, and, on conviction, be subject to fine or imprisonment, or both." By another provision, all clauses in the act relating to diseases are to "extend to all diseases which may be, in the opinion of the Board of Health, deemed pestilential, contagious or infectious, or otherwise dangerous to the health of the city." All the laws to which I have heretofore referred are, I suppose, to be considered as wholly abrogated by the revision of 1827; the subsequent acts may or may not be now in force. The provisions as to health are to be found in chapter xiv, of the revision of 1827. The second title of this chapter relates exclusively to quarantine, and the fourth to the Marine Hospital, while the first, third, and fifth relate to the internal health of this city. It provides for a board of health, appointed by the common council, with the mayor, ex-officio, as president, and retains the health commissioners. Power is given to the Board to appoint health wardens and "to authorize officers to enter into and examine all buildings, lots and places of every description; to give all such directions and adopt all such measures as, in their judgment, may be necessary for cleansing and purifying all such buildings, lots and other places, and to do and cause to be done everything in relation thereto, which, in their opinion, may be proper to preserve the health of the city." It is made their duty to "adopt prompt measures to prevent the spreading of disease," and to "exercise such other powers whenever a contagious disease shall appear in the city, as in their judgment the circumstances of the case and the public good shall require." They may destroy anything "putrid or otherwise dangerous to public health when they shall judge it necessary." "Every person who shall refuse or neglect to obey the directions of this article, or of the Board of Health, pursuant thereto," is guilty of a misdemeanor, and "every person who shall violate any order or direction of the Board of Health, made or given in the exercise of the power vested in them, is guilty of a misdemeanor." As to disease, the provisions of the law upon that subject "extend to all diseases which, in the opinion of the Board of Health, shall be deemed dangerous to the public health." The sixth title relates to other places in the State, including the village of Brooklyn, which now for the first time becomes of sufficient importance to be mentioned

in the health laws. In June 22, 1832, in view of the apprehended ravages of cholera, and especially its introduction from Canada, a temporary act was passed, the first, I believe, which provided for the general organization of Boards of Health. The boards are authorized to make regulations for the "suppression and removal of nuisances and all such other regulations as they shall think necessary and proper for the preservation of the public health," a violation of which is a misdemeanor. This act expired, by limitation, February 1, 1833. It was not till 1850 that there was any further legislation on the subject. On April 10th, in that year, two laws were passed, one (chapter cclxxv) "An act relative to the public health in the city of New York," was the law in force, or rather borne on the statute book, with reference to this city till the Metropolitan Health law was passed. The other (chapter cccxxiv) related to the rest of the State, and is still in force outside of the Metropolitan district. It is not necessary to recapitulate here all the provisions of the law of 1850 with reference to this city. Some of them, however, may be noted, as showing what powers the authorities had.

Health wardens were to be appointed to carry into effect the rules and regulations of the Board of Health, the laws and ordinances of the common council of the city, and the laws of this State relating to the public health; and power was given to the mayor, aldermen and commonalty "to make and pass all such by-laws and ordinances as they shall from time to time deem necessary and proper for the preservation of the public health of the said city; and also for the abatement and removal of all and every nuisance in said city; and for compelling the proprietors or owners of the lot or lots upon which the same may be, to abate and remove the same." It was made "the duty of the city inspector, on complaint being made to him, or whenever he shall deem any business, trade or profession, carried on by any person or persons in the city of New York, detrimental to the public health, to notify such person or persons to show cause before the Board of Health, at a time and place to be specified in such notice, why the same should not be discontinued or removed; which notice shall be a notice of not less than three days (except in case of epidemic or pestilence, the Board of Health may, by general order, direct a shorter time, not less than twenty-four hours), and may be served by leaving the same at the place of business or residence of the

parties to be affected thereby. Cause may be shown by affidavit, and the order of the Board of Health shall be final and conclusive thereon." It was made the duty of the city inspector to "give all such directions and adopt all such measures for cleansing and purifying all such buildings, lots and other places, and to do or cause to be done everything in relation thereto, which, in the opinion of the mayor and the Commissioners of Health of the city, shall be necessary." "Failure to abate or remove a nuisance after notice," was a misdemeanor punishable by a fine of \$1,000, or a year's imprisonment, or both. Prompt measures to prevent the "spreading" of disease were required. Expenses incurred in removing nuisances were recoverable from owners, and were a lien on the land. Authority was given to issue warrants, which the sheriff was to enforce with all the power of the county. Articles dangerous to health were to be removed or destroyed at the expense of the owners, and authority was given to seize buildings for hospitals.

I have thus referred to the contents of most of the former health laws of the State, that have met my notice. To prevent misapprehension, however, it is proper to add that there are some amendatory acts of which I have said nothing, and that I have not referred to the health powers conferred by nearly every village charter that has been passed for many years. Nor have I considered the ordinances upon the subject of health enacted in this and other cities.

If the board has followed me through this examination, it cannot have escaped the notice of any member that from the earliest legislation upon the subject the opinion of the board as to the necessity or propriety of an order or regulation, has been made the sole test. The broadest discretionary power has been vested in them. Give them jurisdiction over a subject and their decision is final. It was not intended that that decision should be reviewed in the courts further than to see that it was within their jurisdiction. If it was a matter relating to health, their power was made above that of the courts; such is the very essence and meaning of a health law. Were it otherwise, a Board of Health would be worse than a fifth wheel to a coach. The former laws, it will be seen, put power into the hands of boards appointed, in whole or in part, by the Governor; gave power to pass general rules and to make specific orders, and made a violation of either a misdemeanor; authorized business to be forbidden, buildings to be

closed, and nuisances abated on the shortest notice; imposed the expense on the owner, gave power to issue warrants, to destroy property, to remove persons and things from the city, and, in short, to do everything that is authorized by the present law. If any member will take, as I have done, a copy of our law, and mark the powers conferred by it, which are also to be found in former laws, he will find literally no new ones. The difference is that an attempt is being made to execute the existing law.

Respectfully submitted,

July, 1866.

GEO. BLISS, JR.,

Attorney to the Board of Health.

OFFICE OF COUNSEL,
METROPOLITAN BOARD OF HEALTH,
NEW YORK, *November, 1866.* }

To the Secretary of the Metropolitan Board of Health:

The attorney of the Board, has, in his report, entered so fully into the details of the action of its legal department, that little more can be added which would not be superfluous. I shall, therefore, properly confine myself to a few brief observations.

1. The duty of preparing a code of health ordinances, and of establishing and enforcing sanitary regulations, imposed upon this Board, is one of great difficulty and importance. It is well known that even the most ordinary sanitary precautions, necessary to be observed in large cities, had been long disregarded in this district, and the mass of the people were, therefore, not well prepared to appreciate or observe the precautionary sanitary rules which are indispensable to secure the public health. Besides, the precedents for health ordinances in this country were limited and superficial. It is very apparent, that before life and health can be adequately protected in New York and Brooklyn (or indeed in any large American city), there must be established and enforced sanitary regulations with much more comprehensive and thorough provisions than any heretofore proposed, or for which the people are now prepared. The public mind needs to be educated upon the whole subject of sanitary science; and when that result is reached, provisions for the protection of health and life will be demanded, and can be readily enforced, which, if now enforced, might be too generally regarded as needless and oppressive.

For these reasons, your code of health ordinances, and your sanitary regulations, have been confined to a codification of rules for the most part found in force in New York or Brooklyn, or other large American cities, with the addition of some general provisions which seemed to be urgently demanded. Such portion of the ordinances as do not relate strictly to the protection of life or health, are founded on ordinances which this Board found in existence, and were enacted in obedience to special powers conferred upon the Board.

2. What has been said relative to these ordinances applies in a general way to the provisions of the law creating your Board.

It cannot be regarded as giving the comprehensive powers which would be demanded to correct many existing abuses endangering life and health in the district; and the sudden exercise of such powers in a community accustomed to little restraint in those particulars, might arouse an unfortunate public opposition against the action, and even existence of your Board. The powers already possessed have been executed with most salutary results, and there is every reason to believe that such consequences will continue to flow from their exercise. It may be better that the action of the Board, in a limited sphere, should thoroughly vindicate its great public utility in the estimation of the community, and that the public appreciation of thorough sanitary regulations should be enlarged and elevated before adequate power should be conferred upon the Board for the proper protection of life and health in the district. For these reasons the amendments of the law now asked for, as suggested in the report from your attorney, are of a very limited, but they are of a very indispensable nature.

3. For the like reasons also. I have advised you that the time has not arrived for attempting in a report to fully suggest (as is authorized by the nineteenth section of the act creating your board) all the "further legislative actions or precautions proper for the better protection of life and health, as well in other parts of the State as especially in said district."

The time cannot be far distant when the board will have had such experience as to enable it to suggest (and when the public will be prepared to receive) a complete codification of the health laws of the district and State, with considerable and comprehensive additions, which shall embody the results and experience of sanitary legislation and science, not only in the United States, but in the other enlightened and older countries, where the subject of protecting life and health has commanded more attention, as well from public authorities as from distinguished writers and thinkers. The cholera visitation of this year, and the successful action of your board, have doubtless done much to develop that condition of public appreciation when such a work will be appropriate.

4. The considerable litigation which the action of the board has encountered and by which it has been embarrassed, and the unfriendly spirit manifested toward it by certain portions of the community, might justly have been anticipated. The demand for its creation arose from gross abuses, endangering life and health; and in the continuance of these abuses a large number of persons had a pecuniary interest. It was impossible to exercise the powers

of the board for the removal of these abuses, without coming in conflict with such interests. It was natural that such interests should take alarm and combine together to resist the proceedings of the board in the courts, and to denounce its authority and purpose as arbitrary, oppressive, and without precedent or constitutional authority. It is unfortunate, however, that so large a portion of the persons owning these interests should have been in the habit of acting in concert in reference to public measures, and should be in a position (as drovers, butchers, fat boilers, managers or owners of crowded tenement houses, scavengers, etc.,) to exert so prejudicial an influence upon the ignorant and destitute classes, for whose especial protection the exercise of the salutary powers of your board are most needed, and were indeed granted. It has resulted from this condition of things, probably, that many ignorant and poor people have exerted their influence against certain measures proposed by this board, and that opposition to it has been made to partake too much of the political affiliations of the citizens of the district. There is every reason to believe that the just and non-partizan character of all its proceedings will very soon fully relieve it of all prejudice, and secure for its action, from all the people of the district, entire sympathy and hearty co-operation. Yet it is not to be disguised that there is reason to fear it may be difficult for the board to secure in all cases, adequate co-operation on the part of some at least, of the judicial tribunals to which it must appeal, as long as all judicial officers are for short terms elective by the people, and are eligible for re-election. In view of the suits now pending and the experience had in the legal department of your board, and especially in obedience to the requirements of the nineteenth section of the health laws, which, says the board in its annual report, "*shall* suggest any further legislative action, &c., proper for the better protection of life and health." &c., I have felt called upon to make this reference to the effect of continuing the existing tenure of judicial office in this district.

5. Having been recently in London, where the subject of protection against contagious and pestilential disease has attracted great attention, I took occasion to visit some of the chief health authorities of that city, and I had the pleasure of learning from them that the action of your board had already attracted the favorable attention of the health authorities of Europe, and that your first annual report was expected with lively interest.

Very respectfully,

D. B. EATON,

Counsel, Metropolitan Board of Health.

“G.”

CENTRAL DEPARTMENT METROPOLITAN POLICE,
OFFICE OF THE SANITARY COMPANY,
NEW YORK, *November 1st, 1866.*

To the Secretary of the Metropolitan Board of Health :

I have the honor herewith to transmit the report of this branch of the Metropolitan police, from March 5th to October 31st, 1866, in tabular form, containing the number of complaints of nuisances reported to your honorable board, the number of orders served for cleansing or repairing, the number complied with by owner, or person in charge of premises on receipt of order, the number enforced by order of the board of police, the amount of unhealthy or unsound meat, fish, &c., seized and removed. Also the number of dead animals removed from the city limits.

All of which is respectfully submitted.

BOWEN G. LORD,

Capt. Sanitary Company Metropolitan Police.

Number of Nuisances reported from Organization of Metropolitan Board of Health, March 5th, 1866, to October 31st, 1866.

Number of sinks reported as being full	7,727
do privies do do filthy	694
do yards do do do	1,137
do sewers do do do	863
do cellars do do do	1,021
do stables do do do	106
do houses do do do	708
do slaughter-houses reported as being filthy	42
do areas and alleys do do	519
do hog-pens do do	87
do vacant lots do do	115
do cesspools and cisterns do do	172
do sinks leaking and unsafe	425
do sidewalks do	142
do houses do	39

Number of stoops unsafe	103
do chimneys unsafe	92
do coal vaults unsafe	154
do hydrants and waste-pipes leaking	616
Total number of nuisances reported	<u>14,761</u>

AMOUNT of Work performed under orders issued by the Metropolitan Board of Health.

Number of Preliminary orders served	<u>4,511</u>
do Preliminary orders complied with by owners ..	2,318
do Preliminary orders not complied with, and general orders issued	<u>2,193</u>
Total	<u>4,511</u>

Number of General orders served	<u>22,592</u>
do General orders complied with by owners	20,899
do General orders enforced by order of the Board of Police	1,095
do General orders on which no order for work has been issued	<u>598</u>
Total	<u>22,592</u>

Number of Special orders served	<u>5,325</u>
do Special orders complied with by owners	2,256
do Special orders not complied with on which final orders have been issued	<u>3,069</u>
Total	<u>5,325</u>

Number of Final orders complied with by owners	608
do Final orders enforced by order of Board of Police	298
do Final orders in hands of mechanics	1,676
do Final orders to connect with street sewer, which could not be executed on account of no sewer in the street	28

Number of Final orders countermanded by order of the Metropolitan Board of Health.....	74
do Final orders on which no order for work has been issued.....	385
Total.....	<u>3,069</u>

NUMBER of Sinks Cleaned, Dead Animals Removed, Unsound Meat, Fish, &c., Seized and Removed from City Limits.

Number of Sinks and water-closets cleaned.....	12,979
do Loads of night soil removed from city limits..	54,018
do Dead horses removed from city limits.....	2,867
do Dead cows removed from city limits.....	144
do Dead goats removed from city limits.....	181
do Dead sheep removed from city limits.....	102
do Dead hogs removed from city limits.....	284
do Dead dogs and cats removed from city limits..	4,616
do Dead calves seized, "Bobs" from city limits..	1,152
Pounds of Unsound veal seized, from city limits	23,025
do Unsound mutton seized, from city limits.....	33,595
do Unsound beef seized, from city limits	28,385
do Unsound pork seized, from city limits.....	5,735
do Unsound fish seized, from city limits	91,020
do Unsound poultry seized, from city limits	1,621
Number of barrels of eggs seized, from city limits	12
do barrels of offal seized, from city limits.....	142,410

“H.”

CODE OF HEALTH ORDINANCES

AND

RULES AND SANITARY REGULATIONS.

METROPOLITAN SANITARY DISTRICT OF THE STATE OF NEW YORK.

At a meeting of the Metropolitan Board of Health, held at its office, at No. 301 Mott street, in the city of New York, on the twentieth day of April, 1866 :

Said Board does hereby make and adopt the following “code of health ordinances,” and make the several “sanitary regulations” (in addition to other regulations), and make and issue the several “orders” and “rules” following (the said orders, rules and sanitary regulations being the several sections of said code), and numbered consecutively from section one to section one hundred and sixty-five, inclusive ; all as the seventy-fourth chapter of the Laws of 1866 in that behalf provides ; and proclamation is made, to wit :

CODE OF HEALTH ORDINANCES.

SECTION 1. That the term “district” and “said district” and “this district,” whenever used herein, shall be held to mean the “Metropolitan sanitary district of the State of New York ;” that the word “board,” “this board” and “said board,” shall be held to mean the “Metropolitan Board of Health ;” that the words “person,” “owner,” “tenant,” “lessee,” “occupant,” “contractor,” “party,” “manager,” “board” and “officer,” shall respectively be held to apply to and include, both jointly and severally, each and all owners, part owners, tenants, lessees, occupants, managers, contractors, parties in interest, persons, officers, boards and corporations, who may sustain the relations, or be in like position of any

one or more thereof referred to in any ordinance or regulation ; that every order, ordinance or regulation declared applicable to the built up portion of New York or Brooklyn, shall, so far as the subject matter thereof is applicable (save as to interments), and this Board as authority to make the same, be held to include and apply to the built up portions of every city and village within said district ; that every word or phrase anywhere herein defined shall be held to be used in the same sense wherever used ; that the word "regulations" shall be held to include "special regulations ;" (which latter will be from time to time issued, and will contain more detailed provisions than can be conveniently herein set forth) ; that the word "permit" shall be construed to mean the permission in writing of this Board, issued according to its by-laws, rules and regulations ; and that every "report herein required shall be held" to be a report in writing, signed by the person (and indicating his official position) who makes the same ; that the word "light" or "lighted" shall be held to refer to natural, external light ; and that all words and phrases herein defined shall also include their usual and natural meanings, as well as those herein especially given.

SEC. 2. That no person shall carelessly or negligently do, or advise or contribute to the doing of, any act or thing dangerous to the life, or detrimental to the health of any human being ; nor shall any person knowingly do or advise, or contribute to the doing of, any such act or thing (not actually authorized by law), except with justifiable motives and for adequate reasons ; nor shall any person omit to do any act, or to take any precaution, reasonable and proper, to prevent or remove danger or detriment to the life or health of any human being.

SEC. 3. That no doctor, druggist or other person shall make, sell, put up, prepare or administer any prescription, decoction or medicine under any false, deceptive or fraudulent name, direction or pretence ; nor shall any false or deceptive representation be made by any person to any other as to the kind, quality, purpose or effect of any such, or other drug, medicine, decoction, drink or other article offered or intended to be taken as food, drink or medicine ; save that, for a good cause, and with a proper motive, the facts relative to any article aforesaid may be withheld from persons being under derangement or delusion, or in a feeble state of mind, the same being prudently and properly done for the benefit of such person.

SEC. 4. That no poisonous medicine, decoction or substance shall be held for sale or sold, except for lawful purposes and with proper motives, and by persons competent to give the proper directions and precautions as to the use thereof; nor shall any bottle, box, parcel or receptacle thereof be delivered to any person unless the same is marked poison, nor to any person which the party who delivers the same had reason to think intended it for any illegal or improper use or purpose.

SEC. 5. That no person shall make, offer, or have for sale, or keep at any place of sale, any poisonous, unwholesome, deleterious or adulterated drugs, drink, medicines or food, or in respect thereto omit any act or thing required, or do any act forbidden, by any law or health regulation of this State applicable in any part of this district.

SEC. 6. That no person shall violate the following provision of the §14 (of the 74th Ch.) of the health law of 1866, which is as follows, to wit :

“And it is hereby declared to be the duty of every owner and
“part owner and person interested, and of every lessee, tenant
“and occupant of or in any place, water, ground, room, stall,
“apartment, building, erection, vessel, vehicle, matter and thing
“in said district, and of every person conducting or interested in
“business therein or thereat, and of every person who has under-
“taken to clean any place, ground or street therein, and of every
“person, public officer and board having charge of any ground,
“place, building or erection therein, to keep, place and preserve
“the same and every part, and the sewerage, drainage and ventila-
“tion thereof, in such condition, and conduct the same in such
“manner, that it shall not be dangerous or prejudicial to life or
“health.”

SEC. 7. That the inspectors of this board, and its proper officers and agents shall make the inspections and examinations required by the last mentioned law; that the Board of Police do execute and cause to be executed, as said law contemplates, all the orders of this board, unless the contrary shall be specially ordered (including as well these orders and the other several orders already and those hereafter to be made), and all persons are hereby forbidden to interfere with or obstruct said inspection, examination or execution.

SEC. 8. That the Board of Metropolitan Police (and its officers and men, as the last named board shall direct) shall promptly

advise this board of all threatened danger to life or health, and of all matter thought to demand its attention; and all Boards of Health and Health Officers, and the Commissioners of Quarantine and the Health Officer of the Port of New York, shall respectively give information to this board concerning any threatened danger to the public health, as the §§ 15, 16, 17 of said law contemplate; and said last mentioned boards and officers, and all persons, officers and boards therein referred to, are hereby required to comply with the following provision of the § 24 of said health law, to wit:

“And it is hereby further made the duty of all persons, officers and boards to make to said Board of Health the reports and returns, and to give the information and afford to said board the aid and facilities which by law or ordinance they or any of them were required to make, afford, or give to any person, officer, or board, when any powers hereby conferred on said Board of Health were exercised by any other officer or board.”

SEC. 9. That it shall be the duty of the institutions, persons and officers hereinafter referred to, to comply with the directions (and with any regulation and rule of this board relative thereto) contained in the following portion of said last recited (§24) section, viz:

“And said board is authorized to require reports and information (at such times, and of such facts, and generally of such nature and extent, relating to the safety of life and promotion of health as its by-laws or rules may provide) from all public dispensaries, hospitals, asylums, infirmaries, prisons and schools, and from the managers, principals, and officers thereof, and from all other public institutions, their officers and managers, and from the proprietors, managers, lessees, and occupants of all theatres and other places of public resort or amusement in said district, etc., etc.; and it is hereby made the duty of the officers, institutions, and persons so called on or referred to, to promptly give such information and make such reports, verbally or in writing, as may be required by said board.”

SEC. 10. That it shall be the duty of all persons and officers therein referred to to conform to and facilitate the execution of the following provisions of the § 22 of said law of 1866, to wit:

“And it is hereby made the duty of all boards, officers and agents having the control, charge, or custody of any public structure, work, ground, or erection, or of any plan, description, outline, drawing, or chart thereof, or relating thereto, made, kept, or controlled under any public authority, to permit and

“facilitate the examination and inspection, and the making of
“copies of the same, by any officers or person thereto by said
“board authorized; and the members of said board, the Sanitary
“Superintendent, or assistant aforesaid, any one of the aforesaid
“Sanitary Inspectors, and such other officer or person as may
“at any time be by said board authorized, may, without fee or
“hindrance, enter, examine, and survey all grounds, erections,
“vehicles, structures, apartments, buildings and places in said
“district, including vessels of all kinds in the adjacent waters,
“and all cellars, sewers, passages and excavations of every sort,
“and inspect the safety and sanitary condition, and make plans,
“drawings and descriptions thereof, according to the order or
“regulations of said board. Said board may make and publish
“a report of the sanitary condition, and the result of the inspec-
“tion of any place, matter or thing in said district,” etc., etc.

SEC. 11. That every person is required to take notice of the following provision of section 14 of the act last referred to, to wit:

“Any member of the police force, and every inspector or officer
“of said Board of Health, as the regulations of either of said
“boards may respectively provide relative to its own subordi-
“nates, may arrest any person who shall, in view of such mem-
“ber or officer, violate, or do or be engaged in doing, or commit-
“ting in said district, any act or thing forbidden by this act, or
“by any law or ordinance the authority conferred by which is
“given to said Board of Health, or who shall, in such presence,
“resist or be engaged in resisting the enforcing of any of said
“orders of said board, or of the Board of Police, made pursuant
“thereto. And any person so arrested shall be thereafter treated
“and disposed of as any other person duly arrested for a misde-
“meanor.”

SEC. 12. That no person, officer, or board within said district (except this board or its proper officers, and as its regulations shall provide), shall grant, sign, or deliver any certificate or “bill of health.”

BIRTHS, DEATHS, AND MARRIAGES.

SEC. 13. That every clergyman, magistrate, and other person who may perform a marriage ceremony, shall make and keep a registry of the marriage celebrated, and therein enter the full names of the parties married, and the residence, age, and condition of each; and every physician, midwife, and other person who may professionally assist or advise at any birth, shall make and

keep a registry of every such birth, and therein enter the time and place, ward and street, number of such birth, and the sex and color of every child born, and the names and residence of each of the parents (so far as the foregoing facts can be ascertained); and every physician and professional adviser who has attended any person at a last illness, or has been present by request at the death of any person, shall make and preserve a registry of such death, stating the cause thereof, and specifying the date, hour, place and street number of such death.

SEC. 14. That it shall be the duty of every person mentioned in the last section (or required to make or keep any such register), to present to this Board a copy of such register, signed by such person, or a written statement, by him signed, of all the facts in said register required to be entered, within five days after the birth or marriage, and within thirty-six hours after the death of any person to whom such registry may or should relate.

SEC. 15. That every clerk, officer, and person within said district, required by the one hundred and fifty-second (152) chapter of the Laws of 1847, or by the three hundred and eightieth (380) chapter of the Laws of 1864, to make or preserve any entry, registry, record, or certificate, as to births, deaths, or marriages, shall send, or cause to be sent, to this Board, within five days after knowledge of the birth, death, or marriage, a statement in writing, containing all the particulars in respect thereto (so far as reasonably ascertainable), which, in any other section hereof, are required to be stated by any person relative to any birth, death, or marriage.

SEC. 16. That every person therein referred to, shall perform the acts required in the following provisions of the section 13 of said Health Law of 1866, to wit :

“ It shall be the duty of the next of kin of any person deceased, and of each person being with such deceased person at his or her death, and of the person occupying or living in any house or premises in or on which any person may die, and of the parents of any child born in said district (and if there be no parent alive that has made such report, then of the next of kin of such child born), and of every person present at such birth, within five days after such birth or death, to report to said Board in writing, so far as known, the date, ward and street number of said birth, and the sex and color of such child, and the names of the parents, and the age, color, nativity, last occupation, and cause of death of such

deceased person, and the ward and street, and place of such person's death and last residence."

SEC. 17. That it shall be the duty of all coroners in said district, to make return to this Board of all inquisitions by them taken, except when, by law, such inquests are required to be filed elsewhere; and in any case of an inquest not returned to this Board, it shall be the duty of the coroner who took the same, within three days after the taking thereof, to file a written statement with this Board, signed by him, stating, so far as he is able, where and upon the body of whom said inquest was held, and the cause, and date and place, of the death of such person.

SEC. 18. That it shall be the duty of every person who has discovered or seen the body of a dead human being, or any part thereof (if there is reason for such person to think that the fact of the death, or the place of such body, or part thereof, is not publicly known), to immediately communicate to this Board the fact of such discovery of such body, the place where and time when the same was discovered or seen, and where the same is or may be found, and any facts known by which said body may be identified.

PHYSICIANS, DISEASES, BOARDING-HOUSE KEEPERS, &C.

SEC. 19. That the ward physician shall include dentists, and every other person who practises about the cure of the sick or injured, or who has the charge of, or professionally prescribes, for compensation, for any person sick, injured or diseased; that the phrase "contagious disease" shall be held to include all persons sick, affected or attacked by, or of a disease of an infectious, contagious or pestilential nature (more especially, however, referring to the cholera, yellow fever, small-pox, ship or typhus fever, but also), including any new disease of an infectious, contagious or pestilential nature, and also any other disease publicly declared by this Board dangerous to the public health; and every physician in said district shall at all times cause his or her name, office and residence, and also his or her kind and class of practice, to be registered with this Board, and in a manner according to its regulations.

SEC. 20. That every physician shall report to this board in writing every person (and the state of his or her disease, and his or her place of dwelling and name, if known) which such physician has prescribed for or attended for, or having a contagious disease,

during any part of the preceding twenty-four hours; but not more than two reports shall be required in one week concerning the same person; and except that one such report to be made daily concerning all the patients at any hospital, asylum or institution shall be sufficient; but every attending or practising physician thereat must, at his peril, see that such report is or has been made by some attending physician.

SEC. 21. That every keeper of any boarding-house or lodging-house, and every inn-keeper and hotel-keeper, shall daily report in writing to this board the same particulars (in the last section required of any physician) concerning any person being at any of the aforesaid houses or hotels affected with any contagious disease.

SEC. 22. That the commissioners, managers, principal or other proper head officer of each and every public or private institution in said district, shall daily report in writing (or cause such report by some proper and competent person to be made daily) to this board, and state therein the name (if known) and condition and disease of any and every person being thereat, and sick of any contagious disease.

SEC. 23. That the master, chief officer and consignee, or one of them, of every vessel (not being in quarantine or within quarantine limits, but) being within one-fourth of a mile of any dock, wharf, pier or building in any city, village or town in said district, shall daily report to this board, or cause to be reported, in writing, the particulars, and shall therein state the name, disease and condition of any person being in or on such vessel, and sick of any contagious disease.

SEC. 24. That it shall be the duty of every person knowing of any individual in said district sick of any contagious disease (which last named person shall have reason to regard such individual as neglected or not properly cared for, to avoid giving said disease to others), and the duty of every physician hearing of any such sick person, which he shall have reason to think requires the attention of this board, to at once report the facts to this board in regard to the disease, condition and dwelling place or position of such sick person.

SEC. 25. That no person shall, within the built up portions of any city or village, without a permit from this board, carry or remove from one building to any other, or from any vessel to the shore, any person sick of any contagious disease, except that, out-

side of the built up portions of the cities of New York or Brooklyn, such removal from any building may be made pursuant to the written consent of two physicians in regular practice, or of two inspectors of this board. Nor shall any person, by any exposure of any individual sick of any contagious disease (or of the body of such person), or by any negligent act connected therewith, or in respect of the care or custody thereof, or by the needless exposure of himself, cause or contribute to or endanger the spread of disease from any such person or from any dead body.

SEC. 26. That no captain, officer, engineer, owner or other person in charge of any vessel (or having right and authority to prevent the same) shall remove or aid in removing from any vessel to the shore (save as legally authorized by the Health Officer of the port of New York, and into quarantine grounds or building only) any person sick of, or person that has been exposed to and is liable very soon to develop any contagious disease, nor so remove or aid in removing any articles that have been exposed to the contagion of any such disease, except in accordance with a permit of this Board, or with its special regulations.

SEC. 27. That the keeper, lessees, tenants and owners of every boarding-house and lodging-house shall, within six hours after the fact shall come to his or their knowledge, notify this Board in writing of the fact of any seafaring man or person lately from any vessel being taken sick at such house, and shall in such notice state where such sick person may be found, and from what vessel, and when he came, to the best of the knowledge of the person giving such notice.

SEC. 28. That no parent, master or custodian of any minor (having power and authority to prevent) shall permit any such child or minor to be unnecessarily exposed, or to needlessly expose any other person, to the taking, or to the infection of any contagious disease.

VACCINATION.

SEC. 29. That every person, being the parent or guardian, or having the care, custody or control of any minor or other individual, shall (to the extent of any means, power and authority of said parent, guardian or other person, that could properly be used or exerted for such purpose) cause and procure such minor or individual to be so promptly, frequently and effectively vaccinated, that such minor or individual shall not take, or be liable to take, the small-pox.

QUARANTINE, AND INFECTED PERSONS AND PROPERTY.

SEC. 30. That the Health Officer of the port of New York (his assistant and deputies) shall at all times keep this Board informed (by weekly written reports) of the number of vessels in quarantine, of the number of persons sick in the floating or other hospitals thereat, and of the diseases with which they are severally afflicted; he (and they) shall also receive into the floating hospital all cases of yellow fever found in this district; he (or they) shall not send or allow to return to the vicinity of any city, village or town in this district, any person, vessel or article which this board has ordered to quarantine, without the permit of this board.

SEC. 31. That no master, charterer, consignee or other person, shall order, bring or allow (having power and authority to prevent) any vessel or person, or article therefrom, from any infected port, nor any vessel, or person or article therefrom liable to quarantine, according to the ninth section of the three hundred and fifty-eighth chapter of the laws of 1863 (or under any other laws, and whether such quarantine has been made or suffered, or not), to come or to be brought to any point nearer than three hundred yards of any dock or pier, or to any building on the shore of any city or village of said district, without (or otherwise than according to) the permit of this board. Nor shall any vessel, or person or thing therein or therefrom (having been in quarantine) come or be brought within the last named distance of any last named place, without the permit or assent of this board.

SEC. 32. That no person shall bring into any city, or into any village of this district, from any infected place or land, or take therein from any vessel lately from any infected port, or from any vessel or building in which had lately been any person sick of a contagious disease, any article or person whatsoever (nor shall any such person land or come into any such village or city without a permit of this Board); and it shall be no excuse that such person or article so offending, or the occasion of offence, has passed through quarantine, or has a permit from any other source than this Board.

SEC. 33. That every master, charterer, owner, part owner and consignee of any vessel (or of the cargo thereof) which shall be in any water in said district (unless detained in quarantine), shall at once give, or cause to be given, to this Board, written notice of any infected article or person, and of every person sick of a contagious disease, being (or having within ten days been) on board

said vessel ; and also of each and every fact and thing relative to said vessel, sick person or cargo, or to the crew of such vessel, which any of the first mentioned persons shall have reason to think may be useful for this Board to know, or be or become dangerous or prejudicial to life or health in said district.

COTTON.

SEC. 34. That every master, owner, charterer, part owner and consignee of any vessel that shall bring any cotton into this district between the first day of May and the first day of November of each year, shall at once report to this Board, or cause to be made in writing a report of the fact of any such cotton being in a dangerous, infected or unsound condition.

RAGS, HIDES, ETC.

SEC. 35. That no master, charterer, owner, part owner or consignee of any vessel, or any other person, shall bring to any dock, pier, wharf or building within one thousand feet thereof, in said district, or unload at any dock, building or pier therein (or have on storage in the built up portion of any city or village of said district), any skins, hides, rags, or similar articles or materials, having been brought from any foreign country or any infected place, or from any point south of Norfolk, Virginia, without or otherwise according to a written permit so to do, from this Board.

SEC. 36. That every master and chief officer of any vessel, and every physician of, or who practised on, any vessel which shall arrive in this district from any other port, shall at once report to this Board any facts connected with any person or thing on said vessel, or that came thereon, which he had reason to think may endanger the public health of this district ; and he shall report the facts as to any person being or having been sick thereon of a contagious disease, and as to there being, or having been during the voyage or since her arrival, any infected person or articles.

OF BUTCHERS AND SLAUGHTER-HOUSES, AND VENDERS OF MEAT, FISH AND VEGETABLES.

SEC. 37. That the word meat, whenever herein used, includes every part of any land animal, and eggs (whether mixed or not with any other substance), and the word fish includes every part of any animal that lives in water, or the flesh of which is not meat, and the word vegetable includes every article of human consumption as food, which (not being meat, or fish, or milk) is held o

offered, or intended for sale or consumption as food for human beings, at any place in said district ; and all fish and meat found therein shall be deemed to be therein, and held for such sale or consumption as such food, unless the contrary be distinctly proved.

SEC. 38. The word cattle shall be held to include all animals, except birds, fowl and fish, of which any part of the body is used as food ; the word butcher shall be held to include whoever is engaged in the business of slaughtering any cattle ; the word "cattle-dealer" shall be held to include every person who is interested or engaged in buying, selling, keeping, driving or slaughtering, or having any cattle in or for sale or consumption in said district ; the word "vegetable-dealer" shall be held to include every person who is engaged or interested in the business of selling, or offering, or having for sale, as human food, any vegetables in said district ; the words "private market" shall include every store, cellar, stand and place (not being part of a public market), at which the business is the buying, selling or keeping for sale, of meat, fish or vegetables for human food.

SEC. 39. That no person shall become, or continue, or engage as, or in the business of, a butcher or cattle-dealer, or as a vegetable-dealer at or in any public or private market or stand in the cities of New York or Brooklyn, in said district, without a permit therefor from this Board.

SEC. 40. That no meat, fish, birds or fowls, or vegetable, nor any milk, not being then healthy, fresh, sound, wholesome and safe for human food, nor any meat or fish that died by disease or accident, shall be brought within any city or village of said district, or offered or held for sale in any public or private market, as such food, anywhere in said district.

SEC. 41. That no calf, pig or lamb, or the meat thereof, shall be brought, held or offered for sale, as such food, in said district, which at the date of its death (being a calf) was less than four weeks old ; or (being a pig) was, when killed, not more than five weeks old ; or (being a lamb) was, when killed, not more than eight weeks old. Nor shall any meagre, sickly or unwholesome fish, birds or fowls be bought, held, sold, or offered for sale, as such food, in said district.

SEC. 42. That no cattle shall be killed for human food while in an overheated, feverish, or diseased condition ; and all such diseased cattle, in the cities of New York and Brooklyn, and the place where found, and their disease, shall be at once reported to this Board by the owner and custodian thereof, that the proper

order may be made relative thereto, or for the removal thereof from said cities.

SEC. 43. The keeping and slaughtering of all cattle, and the preparation and keeping of all meat and fish, birds and fowls, shall be in that manner which is, or is generally reputed or known to be, best adapted to secure and continue their safety and wholesomeness as food.

SEC. 44. That no cattle shall be placed or carried while bound or tied by their legs, or bound down by their neck, in any vehicle in any city or village of said district, but shall be allowed freely to stand in such vehicle when transported, and while being therein.

SEC. 45. That no cattle shall be driven in the generally built-up portions of either of the cities of New York or Brooklyn, except between the hours of nine of the evening and one hour after sunrise of the next morning; nor shall more than twenty cattle, or more than one hundred hogs, or more than one hundred sheep be driven together; and they shall be driven in streets and avenues (leading towards their destination) where they will least endanger the lives of human beings.

SEC. 46. That no cattle shall be kept in any place of which the water, ventilation and food is not sufficient and wholesome for the preservation of their health, and safe condition and wholesomeness for food.

SEC. 47. That every butcher, cattle dealer and vegetable dealer, milk dealer and their agents, shall allow the parties authorized by this board to freely and fully inspect their cattle and meats, fish and vegetables, held, offered or intended for sale, and will be expected to answer all reasonable and proper questions asked by such persons relative to the condition thereof, and of the places where such articles may be.

SEC. 48. That it shall be the duty of every person knowing of any fish, meat, fowl, birds or vegetables being bought, sold or offered, or held for sale (as food for human beings), or being in any market, public or private, in said district, and not being sound, healthy or wholesome for such food, to forthwith report such facts, and the particulars relating thereto, to this board, or to one of its officers or inspectors.

SEC. 49. That no meat or dead animal, above the size of a rabbit, shall be taken to any public or private market for food until the same shall have fully cooled (and all blood shall have ceased dripping therefrom) after its killing, nor until the entrails, head

(unless the same be skinned), hide, horns and feet shall have been removed. Nor shall any gut, fat, or any unwholesome or offensive matter or thing be brought to or near any such market.

SEC. 50. That no decayed or unwholesome vegetables shall knowingly be brought into said district to be consumed or offered for sale for human food, nor shall any such articles be kept or stored therein at all without permission first obtained of this board.

SEC. 51. That no person shall, without consent of said board, bring into said district (for use as a drink for human beings), or offer to have for sale in said district as such drink, any unwholesome, poisonous or adulterated or deleterious liquid.

SEC. 52. That no meat, fish, vegetables, or milk or other liquid, shall knowingly be bought, sold, held, offered for sale, labelled (or any representation made in respect thereof) under false name or quality, or as being as what the same is not as respects wholesomeness, soundness or safety for food or drink.

SEC. 53. That no cased, blown, plaited, raised, stuffed, putrid, impure or unhealthy or unwholesome meat or fish, birds or fowl, shall be held, bought or sold, or offered for sale for human food, or held or kept in any market, public or private, or any public place in said district.

SEC. 54. That every person, being the owner, lessee or occupant of any room, stall or place where any meat, fish or vegetables, designed or held for human food, shall be stored or kept, or shall be held or offered for sale, shall put and keep such room, stall and place, and its appurtenances, in a cleanly and wholesome condition; and every person having charge (or interested or engaged, whether as principal or agent), in the care, or in respect to the custody or sale of any meat, fish, birds, fowl or vegetables (designed for human food), shall put and preserve the same in a cleanly and wholesome condition, and shall not allow the same, or any part thereof, to be poisoned, infected, or rendered unsafe or unwholesome for human food.

SEC. 55. That every butcher and every person owning, leasing or occupying any place, room or building where any cattle have been or are killed or dressed, and every person, being the owner, lessee or occupant of any room, stable (where any cattle may be kept) or market, public or private, and having power and authority so to do, shall cause such place, room, building, stall (and market, being private), and their yards and appurtenances, to be thoroughly cleansed and purified, and all offal, blood, fat, garbage,

refuse and unwholesome or offensive matter to be therefrom removed, at least once in every twenty-four hours after the use thereof for any of the purposes herein referred to; and shall also, at all times (unless some public authority prevents), keep all wood work, save floors and counters in any building, place or premises aforesaid, thoroughly painted or whitewashed.

SEC. 56. That no cattle shall be slaughtered, dressed or hung, or the meat or any part thereof (within any city of said district), wholly or partly within any street, avenue or sidewalk, or public alley or place, nor in any place or position that said killing (or bodies or parts of such animals, when hung and before they have ceased to bleed) shall be in view of any such street, avenue, place or alley, or of the persons who may be therein; nor shall any blood, or dirty water or other substance from such cattle, meat, or place of killing, or the appurtenances thereof, be allowed to run, fall or to be in any such street, avenue, sidewalk, alley or place.

SEC. 57. That no building occupied as a slaughter-house shall (or any part thereof), without a special permit from this Board, be occupied for any other purpose; that every such building shall at all times be kept adequately and thoroughly ventilated; that no blood shall be allowed to remain therein over night; that adequate underground connections shall be made from every such building with a public sewer, and that all loading and unloading of meat, offal, garbage and cattle thereat shall be wholly within said building, or in rear thereof, and not in view of a street or public place.

SEC. 58. No oysters shall be brought to, or offered or kept for sale in any market-place or building between the first day of June and the first day of September of any year, without a permit from this Board.

SEC. 59. That upon any cattle, meat, birds, fowl, fish or vegetables being found by any inspector or other officer of this Board, in his opinion, in a condition unwholesome and unfit for use as human food, or in a condition or of a weight or quality in these ordinances condemned or forbidden, he shall cause the same to be examined by two reputable persons, reasonably competent to judge in respect thereto, which he may conveniently find; and if both said persons disagree with him in opinion in respect thereto, he shall take no action, and give no order relative to the same, till he has been instructed by the sanitary superintendent or his assistant; and if one or both of said persons agree with him in respect to said articles, then such inspector or officer may forbid the same

being offered or exposed for sale, or being sold, for human food, till the owner or party in charge or other proper person has obtained the consent of the sanitary superintendent or of this Board to their being so offered, used or sold. And if both such persons agree with him in opinion, he may order the same to be removed ; and thereupon, or if said superintendent or this Board shall have approved the judgment of said inspector, it shall be the duty of the owner and party in charge to speedily remove such articles from any market, street or public place, and not to sell or dispose, or offer to sell or dispose thereof for the purpose of human food. And in default of such removal, and also in case of disobedience to such order, and also in all cases where, in his opinion, such articles, by reason of their being in a decayed or offensive condition, would, if allowed longer to remain, be dangerous to health, the same (as this Board may provide) may be caused to be removed by any inspector, police officer, or officer of this Board, to some suitable place, at the expense of the party who should have removed the same, and the owner and party in interest must take notice thereof.

SEC. 60. That neither the business of slaughtering cattle, nor the keeping of any slaughter-house, nor the yarding of cattle, shall be begun or undertaken at any new or additional place within the cities of New York or Brooklyn, except pursuant to a permit from this Board ; nor shall any person or corporation keep any slaughter-house or yard, or any cattle therein, after the first day of June, 1866, without a permit from this Board.

SEC. 61. That no person shall kill or dress any animal or meat in any market, nor have, or permit to escape therein or within one hundred feet thereof, any poisonous, noxious, nauseous, or offensive substance.

SEC. 62. That no butcher or dealer shall keep in any market any refrigerator, ice-box, cask, ice or pickle, unless the same shall be placed in the rear of his stable or stand, and within the limits thereof, nor unless the same shall be lined with lead or some proper metallic substance, so as to be water-tight, nor unless the same be provided with a pipe of lead, zinc or copper, leading therefrom to the nearest gutter.

SEC. 63. That no person engaged in the selling or keeping for sale of any fish, meat, birds, fowl or vegetables, shall, without a permit from this Board, occupy or encroach upon portion of any street or sidewalk, or public place in the city of New York; that no

person shall, in the built up portion of New York or Brooklyn, or adjacent thereto, sell or have for sale any fish in or from any vehicle or in any street or public place, from which all parts which are not usually cooked for food have not been removed.

OF GARBAGE, ASHES, PUBLIC STREETS, ETC.

SEC. 64. That the word "street," when used in these ordinances, shall be held to include avenues, sidewalks, gutters and public alleys; and the words "public place" shall be held to include parks, piers, docks and wharves, and water and open spaces thereto adjacent, and also public yards, grounds and areas, and all open spaces between buildings and streets, and in view of such streets; the word "ashes" shall be held to include cinders, coal, any everything that usually remains after fires; the word "rubbish" shall be held to include all the loose and decayed material and dirt-like substance that attends use or decay, or which accumulates from building, storing or cleaning; the word "garbage" shall be held to include every accumulation of both animal and vegetable matter, liquid or otherwise, that attends the preparation, decay and dealing in or storage of meats, fish, fowls, birds or vegetables; and the word "dirt" shall be held to mean natural soil, earth and stone.

SEC. 65. That no part of the contents of or substances from any sink, privy or cesspool, nor any manure, ashes, garbage, rubbish, or dirt, shall be by any person flung or allowed to run or drop into or remain in any street or public place (except as herein elsewhere specified), nor shall the same be thrown or allowed to fall or run into the North or East rivers, nor into any sewer, or save through the proper underground connection.

SEC. 66. That no swill, brine (urine of animals or other offensive animal nuisance), nor any stinking, noxious liquid, or other filthy matter of any kind, shall by any person be allowed to run or fall from or out of any building, vehicle or erection, into or upon any street or public place, or be taken or put therein, save as herein elsewhere provided.

SEC. 67. That no person shall deposit upon any street or public place (within the generally built-up portion of New York or Brooklyn) any dirt or brick, or other material, or dirt taken from any ground therein, in such manner as to occupy more than one hundred square feet of surface of any street or place (and the same shall be compact and at one side), nor allow the same to remain

more than twelve hours, without a permit from this board, or unless such occupancy shall be otherwise duly authorized by paramount authority.

SEC. 68. That it shall be the duty of every owner, tenant, lessee and occupant of any and every building or place of business in the generally built-up portions of the cities of New York and Brooklyn, within forty days after the publication hereof, to provide, or cause to be provided, and at all time thereafter to keep and cause to be kept and provided, within such building or place of business (or within the area or upon the sidewalk in front of every such building or place of business), a suitable and sufficient box, barrel or tub (and several thereof, if needful), for receiving and holding, without leakage, and without being filled to within four inches of the top thereof, all the ashes, rubbish, garbage (and liquid substance of whatever kind), that may accumulate during thirty-six hours from said building or place of business, or the portion thereof of which such person may be the owner, tenant, lessee or occupant; and every such box, barrel and tub designed to hold ashes, shall be made of some suitable metal; and all ashes, rubbish, garbage, and liquid substances that should be removed from such building and place of business (or from that part for which said receptacles were provided, and none other, without the proper consent), shall be daily placed therein before nine o'clock in the forenoon of every day, or shall be retained in said building or place until the proper carts come to take the same away; and no such box, barrel or tub shall remain on any sidewalk or in any public place longer than may be needful for the removal of the contents thereof.

SEC. 69. That such boxes, tubs and barrels shall be placed and kept in such position (unless kept within or upon private grounds, within the sidewalks) as the inspectors or agents of this board shall provide or the police direct; and no person, not for that purpose authorized, shall interfere therewith, or with the contents thereof.

SEC. 70. That all occupants, so preferring, may deliver their ashes, garbage and rubbish directly to the proper carts, to be taken away at any hour of the day when said carts may be present; and said carts may take such articles from receptacles delivered at any such hour; *provided*, that such garbage or rubbish be not highly filthy or offensive; and in the latter case, the same shall not be so delivered or received during the period from sunrise of any day till ten o'clock of the evening of the same day, without a permit from this board, or one of its inspectors or officers.

SEC. 71. That no lime, ashes, dry sand, hair, feathers or other substance that is in a similar manner blown by the wind, shall be sieved or agitated or exposed, nor shall any mat, carpet or cloth be shaken, nor any cloth, yarn, garment or material or substance be scoured, cleaned or hung over, nor any business be conducted over or in any street or public place, or where it, or particles therefrom, or set in motion thereby, will be blown into any such street or public place. That neither any usual nor any reasonable precaution shall be omitted by any person to prevent fragments or other substances from falling, to the peril of life, or dust and light material flying into any street, place or building, from any building or erection, while the same is being altered, repaired or demolished.

SEC. 72: That every person who shall have paved, or caused to be paved, any street or place, shall cause all rubbish, dirt, and whatsoever else he has deposited, or allowed to be deposited on such pavement, to be removed from the several parts of such pavements within five days from the time of the same being deposited thereon. And every person who has removed any flag-stone, curb-stone, pavement-stone or other stone, or dirt or iron in or from any street, sidewalk or place, for the purpose of repairs, or for the purpose of paving, flagging, or curbing or repairing, re-curb-ing or re-flagging, or making any repairs or changes, or otherwise, shall cause the same (or a proper substitute therefor) to be placed or replaced and completed as soon as the same can reasonably be done.

SEC. 73. That no owner, part owner, tenant or occupant of any building or erection shall allow any part thereof, or any substance therein, or anything thereto attached, and which any such person can control or remove, to continue or remain in a position or condition that shall imperil the life or safety of any person who is or may properly be in any street or place.

SEC. 74. That no person shall take, carry, expose or place (or induce any other person so to do) in or upon any street or public place any substance, animal or thing which shall imperil the life or health of any person who is, or may properly be, in such street or place.

SEC. 75. That no person (being owner, lessee or tenant of any house or building) shall allow any water or other noxious liquid to run from or out of his building, erection or ground, upon or across any sidewalk or curbstone or public passage (other than a street), and if such substance is allowed to pass upon any street it

must reach the same by a passage (to be kept at all times adequate and in repair by such person) under or thorough such flag-stone or curb-stone; and no such water or other liquid, or ice therefrom, shall be allowed to gather or remain on the upper surface of such curb, flag-stone or passage; nor shall such person allow any accumulation of such water or liquid, or the ice therefrom, upon any street or place, but shall, at all times, cause the same to be removed, or to pass along the gutter or some proper passage to one of the rivers or into a sewer.

SEC. 76. That no butcher's offal or garbage, nor any dead animals, nor any putrid or stinking animal or vegetable matter, shall be thrown by any person into any street, place, sewer or receiving basin, or into any standing or running water or excavation, or upon the ground or premises of any other person in said district.

SEC. 77. That every person when cleaning any street, shall clean, and every contractor shall cause to be cleaned, the gutters and parts of the streets along which the water will run, before using any water to wash the same; and no substance that could be before scraped away shall be washed or allowed to be carried or be put into any sewer, or into any receptacle therewith connected.

SEC. 78. That no person shall throw, or allow to run or pass into any public reservoir, water pipe or aqueduct, or into or upon any border or margin thereof, or excavation or stream therewith connected, any animal, vegetable or mineral substance whatever; nor shall any person allow the same to be done (having power and right to prevent the same); nor shall any person do or permit to be done (having right or power to prevent the same), any act or thing that will impair or peril the purity or wholesomeness of any water or other fluid used or designed as a drink in any part of said District; nor shall any person bathe (nor except in the discharge of a public duty, put) any part of his person into such water; nor shall any person open any erection or unscrew any hydrant holding such water.

SEC. 79. That it shall be the duty of every person, officer and board, having any authority and control in regard to any water designed for human consumption (and within the proper sphere of the duty of each thereof), to take all usual and also all reasonable measures and precautions to secure and preserve the purity and wholesomeness of such water.

SEWER CONNECTIONS AND SEWERS.

SEC. 80. That it shall be the duty of every person using, making or having any drain, soil pipe, passage or connection between any sewer (or with either the North or East rivers), and any ground, building, erection or place of business, and in like manner the duty of the owner and tenant of all grounds, buildings and erections (and of the parties interested in such place of business or the business thereat), and in like manner the duty of all boards, officers and persons (to the extent of the right and authority of such) to cause and require that such drain, soil pipe, passage and connection shall at all times be adequate for its purpose, and shall convey and allow freely and entirely to pass whatever enters or should enter the same.

SEC. 81. That it shall be the duty of all boards, officers and persons having power and authority so to do or require (and to the extent thereof), to cause to be used sufficient water, and other adequate means to be taken, so that whatever substances may enter any sewer shall pass speedily along and from the same, and sufficiently far into some water or proper reservoir, so that no accumulations shall take place, and no exhalations from thence proceed, dangerous or prejudicial to life or health.

SEC. 82. That the proper officers and authorities shall, to the extent of their power and ability, cause the sewers and drainage of all cities and villages in said district to be so well located and constructed, so adequate in size, and to be so kept in repair and cleaned, and so adequately supplied with water, and with such proper arrangements and constructions in every particular, that life and health shall not be needlessly exposed, or suffer unnecessary peril or detriment, by their neglect, or by reason of the defects or deficiencies of any sewers or drainage, or the want thereof.

SCAVENGERS, CARTS, PRIVIES, SINKS AND CESSPOOLS.

SEC. 82. That no person shall engage in the business of a scavenger, or of transporting manure, swill, ashes, offal, rubbish or garbage, or any offensive or noxious substance (or in driving any cart for such purpose), in the cities of New York or Brooklyn (except the persons acting under the street-cleaning commissioners, or the contractors for cleaning the streets, and as this Board may provide), until he shall have first received a permit from this

Board, of such form and effect as the regulations of the Board shall provide, authorizing such person so to engage.

SEC. 84. That no person shall empty, or attempt to empty, any vault, sink, privy or cesspool in the cities of New York or Brooklyn, except pursuant to a permit therefor, first received from this Board.

SEC. 85. That no vault, privy, sink or cesspool shall hereafter be made or rebuilt in the cities of New York or Brooklyn, except in accordance with the regulations, and pursuant to a permission first obtained from this Board; nor shall any erection or cover be made or put upon, or over the same, until the same has been inspected by some person authorized by this Board, and been found to correspond to such permit and regulations.

SEC. 86. That no water-closet, sink, tub, vat or other structure shall hereafter be constructed within either the city of New York or Brooklyn (having connection with, or by any sewer or underground passage), unless the same is provided with adequate, or the best generally approved constructions and precautions for preventing gases and other offensive currents, substances or smells, from passing up or out through such connection from such sewer or passage; nor shall any such water-closet or privy be constructed without adequate provisions for the effectual and proper ventilation and cleansing thereof.

SEC. 87. That no person shall draw off, or allow to run off into any ground, street or place of any city the contents (or any part thereof) of any vault, privy, cesspool or sink; nor shall any owner, tenant or occupant of any building to which any vault, sink, privy or cesspool shall appertain or be attached, permit the contents, or any part thereof, to flow therefrom, or to rise within two feet of any part of the top thereof, or permit said contents to become offensive.

SEC. 88. That neither the owner, tenant, nor occupant of any building or premises in the built up portions of either the city of New York or Brooklyn, shall employ, cause or permit any part of the contents of any vault, privy, sink, or cesspool (being thereon, and of which he has control) to be removed, unless according to a permit (or the regulations) of this board.

SEC. 89. That no person shall throw into, or deposit in any vault, sink, privy, or cesspool, any offal, ashes, meat, fish, garbage, or vegetable substance, except that of which any such place is the appropriate receptacle.

SEC. 90. That every tub or other receptacle in any necessary house, sink, or privy (or placed or allowed to stand therein by any owner, tenant or occupant of any building or premises, and) used to contain any liquid or partially liquid substance, shall be sufficiently strong, perfectly tight, adequately provided with strong metallic hoops and handles; shall not be allowed to be filled to within four inches of any part of the top, and shall not be allowed (or its contents) to be offensive. And the provisions of these ordinances relative to emptying cesspools, and to throwing any substance therein shall apply to said tubs and receptacles as if here repeated and applied thereto.

And no person shall throw, drop, or allow to fall into the North or East river, or into any street or place, any substance (being or having been part of), the contents of any such vault, cesspool, privy, sink, tub or receptacle.

SEC. 91. That neither the contents of any such tub, receptacle, cesspool, privy, vault, sink, or water-closet, nor anything in any room, excavation, vat, building, premises, or place, shall be allowed to become a nuisance, or filthy or offensive, so as to be dangerous or prejudicial to life and health.

SEC. 92. That no cart or other vehicle for carrying any offal, swill, garbage, or rubbish, or the contents of any privy vault, cesspool, or sink, or having upon it (or in anything on such cart) any manure, or other nauseous or offensive substance, shall, without necessity therefor, stand or remain (nor shall a needless number gather) before or near any building, place of business, or other premises where any person may be; nor shall any such cart or vehicle occupy an unreasonable length of time in loading or unloading, or in passing along any street, or through any place or ground; nor shall any such cart or vehicle, or the driver thereof, or anything thereby appertaining, be (or by any person having a right to control the same, be allowed to be) in a condition needlessly filthy or offensive; and when not in use all such carts, vehicles, and all implements used in connection therewith, shall be stored and kept in some place where no needless offense shall be given to any of the people of said district.

SEC. 93. That all carts and vehicles in the last section mentioned, and boxes, tubs and receptacles thereon in which any substance in said section referred to may be or be carried, shall be strong and tight, and the sides shall be so high above the load or contents that no part of such contents or load shall fall, leak or

spill therefrom; and that when, in the opinion of this board, it is necessary to prevent the contents of such carts or vehicles, tubs or boxes or receptacles from being offensive, each of such carts, tubs and boxes and receptacles shall be adequately and tightly covered, as the orders or regulations of this board may provide or direct.

SEC. 94. That no driver of such cart or vehicle, nor any person having undertaken or being engaged about the loading or unloading thereof, nor person engaged about the cleaning or emptying, or having undertaken to empty or remove any manure, garbage, offal, or the contents of any vault, sink, privy, cesspool, or any noxious or offensive substance, shall do or permit to be done about the same, or in connection therewith, that which shall be needlessly offensive or filthy in respect to any person, street, place, building or premises.

SEC. 95. That no person shall allow (and it shall be the duty of every contractor and person who has ordered or procured, or who is having any of the following articles carried, or who is driving the same, to prevent any cart or vehicle to be so fully loaded, or being in such bad condition of repair, or of such faulty construction, or being so improperly driven or managed, that any offensive liquid, or any manure, garbage, rubbish, offal, dirt or material thereon, shall fall upon or in any place, street or premises; and it shall be the duty of every such person to at once replace on such vehicle and remove what has so fallen.

SEC. 96. That all putrid or offensive matter, and all night soil, and the contents of sinks, privies, vaults and cesspools, and all noxious substances in the built-up portion of any city, shall, before its removal or exposure, be disinfected and rendered inoffensive by the owner, lessee or occupant of the premises where the same may be, or (in default of the same being so done) by the person or contractor who removes or is about to remove the same; and for all such matter so disinfected and rendered inoffensive, the person (not being such tenant, owner or occupant) who shall so disinfect and remove the same, shall be entitled to demand and receive a compensation of not exceeding twelve cents per cubic foot for making such disinfection and removal, to be paid by any tenant, owner or occupant.

SEC. 97. That every cart and other vehicle hereafter constructed for or engaged about any business, or intended to be loaded with any matter or substance in the last section mentioned, shall be

constructed according to these ordinances, and to the regulations and orders of this board.

SEC. 98. That the drivers of all carts for the removal of any garbage, offal, rubbish, or dirt from any building or premises, shall, by the person owning or having control of the same, be provided with a suitable bell; and said bell shall be rung by said driver or some attendant upon such cart, at the proper time and place, adequately and reasonably loud, to give notice (or otherwise adequate notice shall by such person be given) to those dwelling in any street whose building or premises such cart is about to or should approach for the removal of any substance aforesaid.

MANURE.

SEC. 99. That every owner, lessee, tenant, and occupant of any stall, stable, or apartment in which any horse, cattle, or swine, or any other animal shall be kept, or of any place in which manure or any liquid discharge of such animals shall collect or accumulate (within the built up portion of any city), shall daily cause said liquid and manure to be removed to some proper place, and shall at all times keep or cause to be kept such stalls, stables and apartments, and the drainage, yard, and appurtenances thereof, in a cleanly and wholesome condition.

SEC. 100. That no pile or deposit of manure, offal, dirt, or garbage, nor any accumulation of any offensive or nauseous substance, shall be made within the built-up portions of the cities of New York or Brooklyn, or upon any open space inclosed within any portions thereof, or upon the piers, docks, or bulkheads adjacent thereto, or upon any open grounds near (or upon any vessel or scow other than those to be speedily, and according to the duty of any person, removed, lying at) any such pier, wharf or bulkhead, except according to a permit obtained from this Board, and according to its regulations. And no person shall contribute to the making of any such accumulation.

SWINE.

SEC. 101. That no person shall allow any swine to run at large in any city, and no person shall, within the built-up portions of any city, or within one thousand feet of any residence or place of business or street thereof, keep any swine, without a permit so to do from this Board.

SEC. 102. That every place where any such swine may be kept, shall be kept at all times in a cleanly and wholesome condition.

CATTLE.

SEC. 103. That no cattle, sheep, horse, goat, goose or mule, or any dangerous or offensive animal, shall be allowed by any owner, or by any person having charge of or who should have charge of the same, to go at large in any street or public place in either of the cities of New York and Brooklyn.

SEC. 104. That no cattle, swine or sheep, geese, goats or horses, shall be yarded within or adjacent to the built-up portions of either of the cities of New York or Brooklyn without the permit of this Board, or otherwise than according to its regulations.

SEC. 105. That no diseased or sickly horse, cattle, swine, sheep, dog or cat, nor any that have been exposed to any disease that is contagious among such animals, shall be brought into the city of New York or Brooklyn.

SEC. 106. That every animal which is mad or has the hydrophobia shall, by the person owning the same, or having the possession, charge or control thereof, be at once killed; and every animal that has been exposed to such disease, shall be at once confined in some secure place for such length of time as to show that such exposure has not given such animal said disease, and so as to avoid all danger to life or health. And the dead body of any animal that died of such disease shall be at once, by such person, buried not less than three feet under ground, at some place not within one thousand feet of any residence.

DEAD ANIMALS, CONTRACTORS, ETC.

SEC. 107. That no person shall leave in or throw into any place or street or water, nor offensively expose, or bury the body (or any part thereof) of any dead animal in any such street or place; nor shall any person keep any dead animal or any offensive meat, bird, fowl or fish, in such place as the same may be dangerous to the life or detrimental to the health of any person.

SEC. 108. That any animal, being in any street or public place, within or adjacent to the built-up portions of New York or Brooklyn, and appearing, in the estimation of any officer or inspector of this Board (and of two discreet citizens, called by such officer or inspector to view the same in his presence), injured or diseased, past recovery for any useful purpose; and not being attended and

properly cared for by the owner or some proper person to have charge thereof for such owner; or not having been removed to some private premises, or to some place designated by such officer or inspector within two hours after being found or left in such condition, may be deprived of life by such officer or inspector, or as he may direct, and shall thereafter, unless at once removed by the owner or proper person, be treated as any other dead animal found on a street or place.

SEC. 109. That any person having a dead animal or an animal past recovery, and in an offensive condition, on his premises in any city (and not killed for, and proper for use as meat or fish), and every person whose animal, or any animal in his charge or under his control in any street or place, may die or become or be in a condition past recovery, shall at once remove or cause the removal of such animal (dead or alive) to some proper place; and when such place may be designated by any officer or inspector of this Board, to the last-named place.

SEC. 110. That no person other than the inspectors or officers of this Board or the board of police, or persons thereto authorized, shall in any way interfere with such dead, sick or injured animal in any street or place, and no person shall skin or wound such animal in such street or public place, unless to terminate its life as herein authorized, except that the owner or person having control of such animal may terminate the life thereof in the presence and by the consent of a policeman or an inspector or officer of this Board.

SEC. 111. That it shall be the duty of the owner, or of the person that last had or then having charge of any any animal, so dead or injured or diseased, and being in any street or public place, to at once give notice thereof and of the nearest street and avenue where it may be, to some inspector or officer of this Board, or at its principal office in New York or Brooklyn, in whichever city the animal may be, unless such animal is at once removed therefrom by some proper person.

DOCKS, PIERS, ETC., FOR OFFAL.

SEC. 112. That the proper and respective authorities of New York and Brooklyn shall set apart and keep in repair, and furnish the proper docks, piers, bulkheads, and accommodations in each city for the use of the contractors and persons having or that may have any contract or duty of removing offal, garbage, rubbish,

dirt, dead animals, night soil, and other filth or substances, as any contract made and to be made, and the laws and ordinances and regulations thereto applicable, shall contemplate or provide. And no person shall obstruct, delay or interfere with the proper and free use thereof and access thereto, for the purposes for which they may be and should be set apart and devoted, or with the proper performance of such contracts, or as the same may be modified.

SEC. 113. That it shall be the duty of every contractor and person (their agents and employees) who has contracted or undertaken to remove any diseased or dead animal, offal, rubbish, garbage, dirt, night soil, or other filthy, offensive or obnoxious substance, or is engaged about any such removal, or in loading or unloading of any such substance, to do the same with dispatch, and in every particular in a manner as cleanly and little offensive and with as little danger and prejudice to life and health as possible.

SEC. 114. That no matter or material in the section last mentioned shall lie piled up, or partially raked together, in any street or place before the removal thereof, more than a reasonable time, nor for more than four hours in the day time, under any circumstances.

SEC. 115. That every contractor in these ordinances referred to, and every person who has contracted, or undertakes or is bound to do, or is engaged in doing any one of those things, in respect of which these ordinances contain provisions or regulations, shall comply with these ordinances, to the extent that any contract, obligation or duty requires or permits; and no direction of any contractors or persons shall excuse him for a non-compliance with any of said ordinances.

SEC. 116. That no ship, boat, or other vessel or article, shall be taken or allowed by any person to come into or lay to or at or within any dock, pier, bulkhead or slip (or be placed thereon), set apart or appropriated for the use or purpose of the shipment or removal of any offal, garbage, rubbish, dirt, or dead animals, or for the use of any contractor about the removal of any of the foregoing substances, without a permit from this board.

OYSTER SHELLS.

SEC. 117. That every proprietor, lessee, tenant and occupant of any oyster house, oyster saloon or other premises where any oysters, clams, lobsters or shell or other fish are consumed, used or

sold, or where any of the refuse matter, offal or shells thereof accumulate, shall daily cause all such shells, offal and refuse matter to be removed therefrom to some proper place, and shall keep all such houses and saloons and premises at all times free from any offensive smells or accumulations.

SEC. 118. That the owners, lessees, tenants and managers of every blacksmith shop, forge, foundry, manufactory and premises where any business is done, shall cause all ashes, cinders, rubbish, dirt and refuse to be removed to some proper place, so that the same shall not accumulate at any of the above mentioned premises, or in the appurtenances thereof, nor the same become filthy or offensive.

SOIL, FILTH, VATS, ETC.

SEC. 119. That no ground or material filled with offensive matter or substance, or that will emit or allow to arise, through or from the same, any offensive small or deleterious exhalation, shall (adjacent to or within the built-up portion of any city) be opened or turned up, or the surface thereof removed, between the first day of May and the first day of October of any year, except according to a permit first therefor obtained from this Board.

SEC. 120. That no person shall permit or have any offensive water or other liquids or substance on his premises or grounds to the prejudice of life or health, whether for use in any trade or otherwise; and no establishment or place of business for tanning, skinning or scouring, or for dressing hides or leather, or for carrying on any offensive or noisome trade or business, shall hereafter be opened, started or established in the built-up portions of the cities of New York or Brooklyn, nor elsewhere in said district, near any city or village, without a permit of this Board. And every such establishment now existing shall be kept cleanly and wholesome, and be so conducted in every particular as not to be offensive, or prejudicial to life or health.

BONE BOILING, ETC.

SEC. 121. That no person shall boil any offal, swill, bones or fat in the built up portions of any city or village (save in ordinary cooking); nor shall the business of bone crushing, bone boiling, bone grinding, bone burning, shell burning, fat boiling, nor the skinning (or making of glue from) any dead animals (or parts thereof), nor any other occupation that is dangerous or detrimental to life or health, be hereafter established within any of said cities

or villages ; nor shall any person work or engage therein, in any such business or occupation ; and every such business and pursuit shall be promptly discontinued, unless the continuance thereof shall be allowed by a permit of this Board.

MILK, BUTTER, ETC.

SEC. 122. That no person shall have at any place where milk, butter or cheese is kept for sale, nor at any place offer or have for sale, nor shall any person bring or send to any city or village any unwholesome, watered or adulterated milk, or milk known as swill milk, or milk from cows (or other animals) that for the most part lived in stables, or that fed on swill, garbage or other like substance ; nor any butter or cheese made from any such milk, nor any unwholesome butter or cheese.

COWS.

SEC. 123. That no person shall keep or allow to be kept in any building, or on any premises, or on grounds of which he may be the owner, lessee, tenant or occupant, more cows or other cattle than at the rate of fifteen to an acre (in or near the built up portions of any city or village), without a permit from this Board. And every such person shall cause every stable and place where any cows, horses or other animals may be, to be kept at all times in a cleanly and wholesome condition, and shall not allow any animal to be therein, while infected with any disease contagious or pestilential among such animals, without a permit from this Board.

SNOW, ICE AND SIDEWALKS.

SEC. 124. That every owner, lessee, tenant and occupant of any building or lot in the built-up portions of the cities of New York or Brooklyn, shall, within two hours after the fall of any snow exceeding one inch in depth, and within two hours after the forming of any ice on the sidewalk or in the gutter in front of or against the side of such building or lot, remove or cause the same to be removed, from such sidewalk and gutter; or in case of great difficulty in removing such ice, that every such person do sprinkle or cause to be sprinkled thereon sand or ashes, so that traveling thereon shall not be perilous ; but that where said snow falls or ice forms between the hours of eight o'clock of the evening and daylight in the morning, this ordinance will be complied with by removing or sprinkling the same within two hours after sunrise of the morning succeeding its fall or formation.

SEC. 125. That every owner, tenant, lessee and occupant of any building or lot (whether vacant or occupied), within or near the built up portions of any city or village, shall keep or cause to be kept the sidewalk and flagging, and curbstone in front thereof, in good repair and condition; and that every such person shall keep and cause every such sidewalk to be kept free from obstructions, as well as also free from incumbrances that may be a nuisance, and free from all substances of every kind.

SEC. 126. That no person shall take, or allow to go or be taken (having the right and ability to prevent the same) any horse or other animal above the size of a dog, nor any vehicle other than a baby vehicle, upon any sidewalk or foot-path, in front of any building, or to the peril of any person; nor shall any person block up or obstruct any street or place, or contribute thereto.

NUISANCES.

SEC. 127. That no person shall commit or create, or contribute to the commitment or creating of any nuisance, either public or private; nor shall any person (having the right or ability to prevent or remove the same) allow the commitment, or erection of or continuance of any nuisance upon any premises or ground, or in any building of which such person is the owner, lessee, tenant, or occupant.

TENEMENT-HOUSES, BOARDING-HOUSES, LODGING-HOUSES, MANUFACTORIES, AND SALOONS.

SEC. 128. That the phrase "tenement-house" shall be held to include every building, public or private (and every story and portion thereof), which is rented, leased, let, or hired out, to be occupied for any period (certain or uncertain) as the residence, home, or house of any person, or is intended so to be.

The phrase "boarding house" shall be held to include every building (and every story and portion thereof) which is at any time or usually used, leased, or occupied (or intended so to be) by any number of persons, exceeding ten, as boarders thereat.

The phrase "lodging-house" shall be held to include every building, public or private (and every story and portion thereof), which is let at any time or is usually hired, occupied (or intended so to be) as sleeping apartments of any persons exceeding ten (not being the owner or lessee thereof); and the word "manufactory" shall be held to include every building (and every story and portion thereof) in which any sort of labor or work is done which

calls for the continual or usual presence of several persons during several hours of the day or night engaged about said work or labor; and the word "saloons" shall be held to include every portion of any building in which the business of selling meals, liquors, drinks or refreshments, of any kind, shall be conducted, and includes concert saloons.

SEC. 129. That no person, being the owner, lessee, tenant or occupant of any building, shall engage in, or permit the conducting therein of the business of keeping a lodging-house or saloon, without having first stated to this Board, in writing, the street and number of such building, the name of the owner or owners thereof, and the name of the tenants and persons who conduct or intend to conduct such business thereat, or is about so to do, and the portion of any building so occupied or intended to be, and such other particulars as the regulations of this Board may require.

SEC. 130. That it shall be the duty of every owner and lessee (which lessee holds or took any portion of any building to be rented or hired out to any other person or persons) of any and every building, and of every room and apartment thereof, occupied as a tenement-house, lodging-house, boarding-house, manufactory or saloon, (and neither such person shall omit) to have every such building, room, or apartment so adequately lighted, ventilated, purified and cleansed, and so provided with all needful drainage and sewerage, that no person occupying or being employed at or in such room, building, or apartment shall, through default of a compliance herewith, suffer any effects or incur any hazards, dangerous or prejudicial to life or health.

SEC. 131. That no person, being the manager or keeper of any saloon, boarding-house or lodging-house, or being employed as a clerk, servant or agent thereat, shall therein or thereat offer or have for food or drink, or to be eaten or drank, any poisonous, deleterious or unwholesome substance, nor allow anything to be done or to occur dangerous to life or prejudicial to health.

WATER CLOSETS.

SEC. 132. That every person who shall be the owner, lessee or keeper or manager of any lodging-house, boarding-house, tenement-house or manufactory, shall provide or cause to be provided for the accommodation thereof, and for the use of the lodgers and boarders and workers thereat, adequate privies or water-closets, and the same shall be so adequately ventilated, and shall at all

times be kept in such cleanly and wholesome condition as not to be offensive, or be dangerous or deleterious to life or health. And no offensive smell or gases, from or through any outlet or sewer (up through any such privy or water-closets), shall be allowed, by any person aforesaid, to pass into such house or any part thereof, or into any other house or building.

SEC. 133. That no owner, lessee or keeper of any tenement-house, lodging-house, boarding-house or manufactory shall cause or allow the same to be over-crowded, or cause or allow so great a number of persons to dwell, be or sleep in any such house, or any portion thereof, as thereby to cause any danger or detriment to life or health; nor shall more persons than one for one thousand feet of cubic contents be allowed to sleep in any apartment of any such boarding-house, tenement-house or lodging-house; nor shall more than one person for every one thousand cubic feet of contents be allowed to dwell in any such last mentioned houses. And for the purpose of computing such space, no cellar, nor any closet, hall, cupboard, nor any room not properly lighted and ventilated, nor any room or space not used as a part of the dwelling apartments of the family or other occupant, shall be computed or taken into account.

SEC. 134. That every owner, lessee and tenant and manager of any boarding-house, tenant-house and lodging-house or manufactory shall (with all reasonable dispatch) cause every part thereof and its appurtenances to be put (and shall thereafter cause the same to be kept) in a cleanly and wholesome condition, and shall speedily cause every apartment thereof (in which any person may sleep, dwell or work) to be adequately lighted and ventilated; and (if the same be a manufactory) shall cause every part thereof in which any person may work, to be maintained at such temperature, and be provided with such accommodations and safeguards, as not, by reason of the want thereof, or of anything about the condition of any such manufactory or its appurtenances, to cause unnecessary danger or detriment to the life or health of any person being properly therein or thereat.

SEC. 135. That no owner or lessee of any building, or any part thereof, shall lease or let, or hire out the same, or any portion thereof, to be occupied by any person (or allow the same to be occupied) as a place in which (or for any one) to dwell or lodge; except when said buildings or any parts thereof are lighted, ventilated, provided and accommodated, and are in all respects in

that condition of cleanliness and wholesomeness for which these ordinances or any law of this State provide, or in which they or either of them require any such premises to be kept. Nor shall any such person rent, let, hire out or allow (having power to prevent the same) to be used as or for a lodging-house, tenement-house or any building, any portion or apartment of any building, which apartment or portion has not at least one-half of its height and space above the level of every part of the sidewalk and curbstone of any adjacent street, nor of which the floor is damp (by reason of water from the ground), or which is impregnated or penetrated by any offensive gas, smell or exhalation prejudicial to health. But this section shall not prevent the leasing, renting or occupancy of cellars or rooms (less elevated than aforesaid, and as a part of any building rented or let), when they are not let or intended to be occupied or used by any person as a sleeping apartment, or as a principal or sole dwelling apartment.

SEC. 136. That no person (having the right and power to prevent the same) shall knowingly cause or permit any person to sleep or remain in any cellar, or in any place dangerous or prejudicial to life or health, by reason of a want of ventilation or drainage, or by reason of the presence of any poisonous, noxious or offensive substance or otherwise.

SEC. 137. That no building or any apartment thereof, hereafter built or rebuilt for such purpose, shall be leased, rented or occupied for the purpose of a tenement-house, lodging-house or boarding-house in any city (if intended or allowed to contain more than twenty boarders), unless it conform to the foregoing ordinances, nor until the following conditions exist and are fulfilled in respect thereto :

1. Adequate sewerage and drainage of the most approved construction.

2. Adequate and wholesome ventilation of every room in which any person is to sleep or dwell.

3. Adequate chimneys running through every floor, and an open fire-place or grate or stove properly connected with said chimney, to each family and set of apartments.

4. Adequate and well ventilated and sewerred or vaulted privies or water-closets, so situated and easily preserved in a wholesome condition, as not to become offensive to the inmates of any apartment, or to any persons.

5. The least clear perpendicular space of any story (between the floor and ceiling thereof) to be nine feet.

6. Adequate halls, passages and stair-cases, and proper conveniences and receptacles for ashes and rubbish for the use of all the contemplated occupants.

7. A cellar, or an open space beneath the lowest wooden floor and story, of not less than two feet from the lowest part of the beams, and in which space or cellar no water shall stand or can accumulate.

8. An open area in the front and rear of the whole of such building, and extending to the bottom of such open space, or at least one foot below the lowest floor aforesaid; and said area, not being less than three feet deep (both in front and in rear) of such building, shall be open and unobstructed, except by the entrance, up to the flag-stone and surface at all times.

9. Croton or other water furnished at one or more places on such premises, so that the same may be adequate and reasonably convenient for the use of all the occupants thereof, on their making the usual payments to the proper authorities.

10. No appurtenances, or anything therewith connected, that shall peril life or health.

11. The usual and all reasonable precautions and provisions in every other particular, and adequate space for all occupants, so that the occupancy of said building or any apartment shall not be dangerous to life or health.

12. A correct and detailed outline sketch of each story, showing the height of each, the several windows and passages, rooms, and the dimensions of each, to be filed with this Board. And all the provisions of the foregoing sections shall apply, so far as reasonably applicable, to all saloons and manufactories which may be hereafter built or rebuilt.

SEC. 138. That no person shall hereafter erect, or cause to be erected or converted to a new purpose, by alteration of any building or structure, which (or any part of which) shall be inadequate or defective in respect to strength, ventilation, light sewerage, or of any other usual, proper or necessary provision or precaution; nor shall the builder, lessee, tenant or occupant of any such or of any other building or structure (within the right or ability of either to remedy or prevent the same), cause or allow any matter or thing to be or to be done in or about any such building or

structure dangerous or prejudicial to life or health. Nor shall any tenement-house or lodging-house be used as a place of storage.

INTERMENTS.

SEC. 139. That no interments of any dead body of any human being, or disposition thereof in any tomb, vault or cemetery, shall be made either within the city of New York or Brooklyn, without a permit therefor granted by this Board, nor otherwise than in accordance therewith, and no sexton or other person shall assist in or assent to or allow any such interment, or aid or assist about preparing any grave or place of deposit for any such body, for which such permit has not been given authorizing the same. And it shall be the duty of every person who shall receive any such permit to preserve, and to return the same to this Board, as its regulations may require.

SEC. 140. That no new burying-ground, cemetery, tomb or vault for dead bodies shall be established, nor shall the remains of any dead human body be placed in any existing burying-grounds, vault, tomb or cemetery, in either of said cities, nor any of said receptacles be opened, exposed or disturbed, except according to the terms of a permit therefor given by this Board; and every body buried in any such place shall be buried to a depth of six feet below the surface of the ground and six feet below any adjacent street.

SEC. 141. That every sexton and other person having charge of any burying ground, cemetery, tomb or vault, in either of said cities, shall, before 12 o'clock of Monday of each week, make return to this Board of the bodies and persons buried since their last return, and in such form, and specifying such particulars, as the special regulations of this Board shall require.

SEC. 142. That no captain, agent or person having charge of or attached to any ferry-boat, sailing or other vessel, nor any person in charge of any car, stage or other vehicle or public or private conveyance, shall convey or allow to be conveyed (thereon or by any means aforesaid) from or in either the city of New York or Brooklyn, the dead body (or any part thereof) of any human being, without a permit therefor from this Board. And the proper coupon for that purpose (attached to any such permit when issued) shall be preserved and returned to this Board (as its regulations may require) by the proper officer or person on such boat or vessel, and by the proper person in charge of any

train of cars (or vehicle) on which any such body may be carried from either of said cities.

SEC. 143. That no person shall retain, expose, or allow to be retained or exposed, the dead body of any human being to the peril or prejudice of the life or health of any person.

SEC. 144. That no large or church bell shall be rung or tolled at any funeral in either of said cities without a permit therefor from this Board; nor shall such bell be rung or tolled at any other time (therein) to the prejudice or peril of the life or health of any human being.

SEC. 145. That every person who acts as a sexton or undertaker in the city of New York or Brooklyn, or has the charge or care of any vault, tomb, burying ground or cemetery for the reception of the dead, or where the bodies of any human being are deposited, shall cause his and her name and residence, and the nature of his charge and duties, to be registered with this Board.

GAS.

SEC. 146. That no person or company being a manufacturer of gas, or engaged about the manufacture thereof, shall throw or deposit, or allow to run (or, having the right and power to prevent the same, shall permit to be thrown or deposited) into any public waters, river or stream, or into any sewer, therewith connected, or into any street or public place, any gas, tar, or any refuse matter of or from any gas-house, works or manufactory; nor shall any such person or company allow any substance to escape from such house, works or manufactory (or make any gas of such ingredients or quality that any substance shall escape therefrom, or be formed in the process of burning any gas), which shall be needlessly offensive or dangerous, or prejudicial to life or health.

FIRE-ARMS AND DEADLY WEAPONS.

SEC. 147. That no person shall sell, loan or give to, or allow to be taken by any other person, any fire-arms, or other deadly or dangerous weapon, when there shall be any reason for such first named person to think or believe that any danger to life may illegally result from the giving, loaning, selling, or from the use of such arm or weapon.

SEC. 148. That no person shall, except according to a permit or the regulations of this board, set off or fire any gun or other fire arm, or rock blast in any public street, alley or place within the

built-up portions of any city in said District, unless pursuant to some competent authority.

DRINK—LIQUORS.

SEC. 149. That no person shall sell or give to any other person (or permit such other person to get, having the right and ability to prevent the same) any intoxicating or exciting drink, when such first named person may have reason to think or believe that such drink may cause or contribute to danger, or detriment to life or health. And no person shall give or sell to any child under twelve years of age any intoxicating liquid or drink.

SEC. 150. That no person shall sell or give away, or keep for sale as a drink or beverage at any building or place in said district any intoxicating or alcoholic fluid or substance, unless and except while the keeping and selling of the same at such place is according to and under a sufficient license for such purpose issued and existing according to law.

SEC. 151. That no distiller or brewer, or other person, shall manufacture, or have or keep for sale any liquid designed as a drink or beverage for human beings which would be, if used, needlessly dangerous or detrimental to life or health, or which is not wholesome, genuine, and safe as such drink.

FIGHTING.

SEC. 152. That no person shall engage in or encourage any fight, or dealing of any blow by any human being in said district; nor shall any person permit such fight, having power and authority to prevent the same.

HORSE-RACING, FIREWORKS, KITES, ETC.

SEC. 153. That no person shall race, or run any horse or other animal (or allow the same to be run), or throw or send up any kite, stone or other substance, or burn or set off any fireworks, fire-crackers or other substance, whereby, or by reason of which, any human life may be put in danger or peril.

EXPLOSIVE SUBSTANCES.

SEC. 154. That no person shall store, or have in any building or place within the built-up portions of any city or village (except in the State arsenals), or in any vessel, or in or on the docks, wharves, slips or piers thereof, or load, or have or transport in any vehicle in such city, more than twenty-five pounds of gunpowder, without

a permit from this board; nor without such permit shall any person have or keep more than twenty-five pounds of combustible fireworks, explosive fluid or similar materials, in any building, vessel or vehicle in any such city.

PRISONS.

SEC. 155. That no keeper, or other officer or person having control or authority in any jail, prison or other place where any person may be kept or confined, shall needlessly or illegally cause or allow any peril or detriment to the life or health of any person, by reason of too little or too much heat, or of a want of food, drink, or ventilation, or from the want or neglect of any other reasonable care, protection or precaution.

THEATRES.

SEC. 156. That the term "theatre" shall be held to include the building, rooms and place where any play, concerts, opera, circus, trick of jugglery, show, gymnastic or other exhibition, masquerade, public dance, drill, lecture, address or other public or frequent gathering or amusement, are, is, or may be held, given, performed or take place, and the approach and appurtenances thereof.

SEC. 157. That no person, being the lessee, manager, conductor or owner of any theatre, shall cause or permit, or allow the same, or any part or appurtenance thereof, to be so far overcrowded, or inadequate, faulty or insufficient, in respect of strength, ingress or egress, cleanliness, ventilation, over or under heating or exposure to drafts, or in any other particular, as that thereby or by reason thereof, any needless peril or detriment shall come or happen to, or be incurred or suffered by, any person being properly at or in any such theatre.

SCHOOLS AND CHURCHES.

SEC. 158. That no master or teacher, or manager of or in any school, public or private, or of or in any Sunday school or gymnasium, nor the officers or managers thereof, nor officers or managers, or persons having charge of any place of public worship, shall so far omit or neglect any duty or reasonable care or precaution respecting the safety or health of any scholar, pupil or attendant, or respecting the temperature, ventilation or cleanliness or strength of any church, hall of worship, school-house, school-room or place of practice or exercise, or relative to anything appurtenant thereto, as that by reason of such neglect or omission the life or health of any person shall suffer or incur any needless peril or detriment.

POUNDS.

SEC. 159. That no person shall act as or be a keeper of any public pound in the city of New York, except pursuant to a permit from this Board.

That the keepers of all such pounds shall not allow the same, or any animal therein, by reason of any want of care, food, ventilation or cleanliness, or otherwise, to be or become dangerous or detrimental to human life or health.

SEC. 160. That every such pound-keeper shall from time to time report to this Board as its special regulations may require, and shall obey and conform to all such regulations; and that in the meantime such pounds shall (in the particulars not herein mentioned) be regulated by the rules heretofore enacted by the proper authorities of said cities respectively.

DOGS.

SEC. 161. That no person shall take or call any dog into, or allow any dog to go into any street or public place, in either the cities of New York or Brooklyn, unless properly muzzled, or unless when being led by a chain or string; and nothing in this section shall repeal or supersede any existing regulations as to such dogs, not inconsistent herewith.

MANUFACTORIES.

SEC. 162. That no person shall hereafter erect, start or establish in any city in this district (nor in any village, without the consent of this Board), any manufactory or place of business for boiling any varnish or oil, or for the distilling of any ardent or alcoholic spirits, or for making any lamp-black, turpentine or tar, or for conducting any other business that will or does generate any unwholesome, offensive or deleterious gas, smoke, deposit or exhalation, or any business that is or would be dangerous to life or detrimental to health.

POLICE AND GENERAL SANITARY POWERS.

SEC. 163. That, except as herein specially or otherwise provided, or as may be hereafter provided, or as is otherwise made necessary by the said seventy-fourth chapter of the Laws of 1866, the Board of Metropolitan Police shall (through its proper officers and men, and as near as may be according to its existing regulations, or

[Assem. No. 241.]

amendments to be made thereto, on advice with this Board, and subject to the supervision of this Board) carry into effect and exercise the sanitary powers heretofore exercised by said board of police ; and that said board of police shall keep this Board regularly advised of its action in that behalf, and shall conform to these and all future ordinances, and to all special regulations of this Board.

SPECIAL REGULATIONS.

SEC. 164. That every person shall observe and obey each and every special regulation, and every order of this Board that is or may be made, for carrying into effect any of the foregoing ordinances or powers, or any law of this State, or otherwise, whether issued directly by the Board, or promulgated by its sanitary superintendent, as if the same had been herein inserted at length.

SEC. 165. That every person who omits or refuses to comply with, or who resists any of the provisions of these rules, orders, sanitary regulations or ordinances, or any of the provisions of said seventy-fourth chapter of the Laws of 1866, or its amendments, or the execution of any order or special regulation of this Board, will be liable to the arrest, penalty, fines and punishment in said law provided and declared ; of all of which notice must be taken.

Made, ordered and proclaimed by "*The Metropolitan Board of Health of the State of New York*," the day and year first above written.

The above is the code of health ordinances adopted by the Metropolitan Board of Health, and the whole thereof.

April 20, 1866.

[L. S.]

JACKSON S. SCHULTZ,

President.

EMMONS CLARK, *Secretary.*

"I."

R E P O R T
UPON THE
S A N I T A R Y C O N D I T I O N
OF
W A S H I N G T O N M A R K E T.

NEW YORK, *April 6, 1866.*DR. E. B. DALTON, *Sanitary Superintendent.*—

SIR:—I have the honor to make the following report in respect to Washington Market and the surrounding stands or stalls:—

Washington Market is one of the public markets of the city of New York (the stalls of which are rented by said city), situated in the Third ward, and near the lower end, and in the narrow and overcrowded portion of said city. Said market occupies the space bounded by the following public streets, and the same have been used as public streets for many years—Vesey street on the north, Fulton street on the south, West street on the west, and Washington street on the east. Each of said streets has a portion thereof flagged, and for many years used as a public sidewalk. Said streets at the market are of the following width:—Fulton street, fifty-six feet ten inches wide; Vesey street, fifty-seven feet wide; West street, seventy-two feet one inch wide; Washington street, sixty feet ten inches wide, be the same distances more or less. The sidewalk of Vesey street is fourteen feet wide; of Fulton street, fourteen feet; of West street, sixteen feet ten inches; of Washington street, fourteen feet.

The market building, as originally built, came up to the edge of the said sidewalks, respectively; that the original building is built of brick, wood and stone, and is, generally, one story in height, though over a portion of it, a second story is raised; and the roof being unfurnished with sufficient openings for ventilation, there is, therefore, the greatest need for all possible side-ventilation. Said market is situated on low and made ground. The

sidewalks rest upon the this made ground, and there are no cellars or vaults underneath them. West street, in front of the market, is very dirty and imperfectly drained.

Some years since parties were allowed to construct lines of stalls, partly on the portions of the said streets devoted to vehicles, and partly on the portion used as a sidewalk, which stalls, being on Vesey street, Fulton street and West street respectively, are—on West street, about sixteen feet deep, of which about one and a half feet are on the sidewalk, and the rest on the other portion of the street; on Fulton street, about six feet two inches deep, of which about one a half feet are on the sidewalk, and the rest on the other portion of the street; and on Vesey street, about eight and a half feet are on the sidewalk, and the rest upon the other portion of the street. These stalls are attached to the main building through the medium of their roofs only, and are of a cheap and rude structure, being mostly made of rough boards, and are only one story in height. A large number of said outside stalls are used for hanging quarters of beef for sale, and others are used for selling various meats and vegetables, and much obstruction is caused, and the passage-way rendered difficult thereby.

On the opposite side of West street, is another market known as "West Washington Market," with stalls, which also come up to the line of the curb, or where the curb should be, and the space between the stalls on the opposite side of West street is only about thirty-nine feet three inches. In this narrow space are laid the double tracks of a horse-railroad, on which pass a great number of cars; and all said streets and sidewalks in the vicinity of said market are much traveled and are so overcrowded that passage is often delayed and is generally difficult.

It is my opinion, that said outside stalls are a nuisance; that they seriously impair the ventilation of said market; that they obstruct the free circulation of air which should be secured to preserve the wholesomeness of articles of food kept for sale in the said market; that they make it very difficult to keep the market clean; that the effect of said outside stalls and the said want of adequate ventilation are prejudicial to health in the city of New York.

J. HAVEN EMERSON,

Sanitary Inspector,

Metropolitan Board of Health.

“K.”

REPORT

OF

INSPECTOR MOREAU MORRIS,

UPON THE

NUISANCE FROM FAT-MELTING.

TO JACKSON S. SCHULTZ, Esq.,

President of the Metropolitan Board of Health :

Sir—In compliance with your order for a special report upon the most effectual method to be adopted for abating the nuisance of the effluvia from fat-melting, I have the honor to state :

I have made a thorough personal examination of every place within the city limits where these operations are carried on.

Every facility was afforded, every process fully explained, an anxiety manifested, and a willingness expressed to adopt that which, in the judgment of the Board, may be decided upon.

The odors which are the cause of so much just complaint, are contained in the gaseous vapor evolved during the melting of the crude animal tissues containing fat.

Fat at one time was regarded as an unmixed organic substance, but the researches of the French chemist, Chevreul, first showed it to be composed of several salts, combined with a base, forming a compound, and water.

The principal acids which he discovered are three, called stearine, margarine, and olaine or elaine ; these combine with the base glycerine, and it is upon the predominance of one or other of these salts that the consistence of tallow depends.

Chemically pure fats have no taste, smell, or color, and leave a grease spot on paper. Practically there are no chemically pure fats manufactured. They are lighter than water, and have a spe-

cific gravity of 91 to 94; all of them soluble in ether, a few in alcohol, and none in water. Heated by themselves, they will resist an atmosphere of 500 degrees Fahrenheit, but above that decompose; hence their name as fixed oils, in contradistinction to volatile oils, which may be distilled without alteration.

When oils in vats are heated with the hydrated alkalies, such as lime, potash, or soda, a process called saponification takes place.

When fats are heated to between 500 and 600 degrees Fahrenheit, they begin to undergo a decomposition; the base glycerine, which they contain, is then decomposed, and a product named acroleine—a very acrid, irritating vapor—is set free.

Animal fat, with which this report has special reference, is contained in the adipose or cellular tissue, obtained from slaughtered animals, such as cattle, calves and sheep. This is extracted by exposure to heat of sufficient intensity to liquify the fat and burst the containing cells. It is during this exposure to heat that the foul odors are given off, in the form of gaseous vapor, consisting of sulphuretted and phosphuretted hydrogen and ammoniacal gases; the odor of these is more or less offensive, depending upon the amount of decomposition of the crude material before the time of heating. These animal tissues containing fat are much more subject to rapid decomposition than other portions of the animal.

When only fresh, recently slaughtered, raw, fatty material is used, before decomposition takes place, the smell of melting is not unlike that from the ordinary cooking of fresh meat. From the fact that the butchers, from their scattered localities (in many instances miles from the fat-melting establishments), either from carelessness or want of time, fail to bring their fatty material to the melting-house until many hours have elapsed, during which rapid decomposition takes place, arises much of the evil complained of, and it should not altogether be charged upon the tallow melters.

If the slaughtering of cattle could all be done at one or two points, and the melting of the fatty tissues at the same places, this offence (even by the ordinary processes) would be slight, in comparison with what it is under present circumstances. Nevertheless, under any condition, there will always be given off offensive odors during the melting process, from the fact that more or less of nitrogenized matters are being decomposed, which are always in combination with these fatty materials.

The methods by which tallow and fats are extracted from the raw animal tissues, as they come under observation in this city, are few, and, with some exceptions, of the rudest kind—indeed, in most instances, such as were in use four or five hundred years ago. In no branch of the arts does there seem to be so little advance, notwithstanding the progress of science. Chemistry, which in this business should be the foundation, seems to have been almost utterly ignored in obtaining this valuable product. The energies of those engaged in the business seem to have been directed to the construction of tall chimneys, in order to diffuse to a greater distance the nuisance created by their ignorance.

Methods have been proposed by science for the extraction of fat by means of the hydro-carbon oils, and by naphtha; also, by using bi-sulphide of carbon, in which the yield is much greater, and the product said to be superior. These are patented, but not well understood in this country, although extensively applied in Germany and France.

The processes most usually found in operation in this city, at the present time, are simply by applying heat to the bottom of an open or imperfectly-closed kettle or tank, containing the raw fatty material in all stages of decomposition. These kettles or tanks are connected by flues with tall chimneys, through which the gaseous vapor from the melting tissues is carried and diffused into the surrounding atmosphere, far and near. When heated sufficiently to liquify the fat, it is then dipped into another vessel and allowed to settle, after which it is packed into casks to harden, and then becomes fit for market.

The animal tissues remaining, called greaves or scraps, are then taken out and pressed into large cakes; these are sold for fattening swine and for manure.

The time, indeed, has arrived when competent authority should take cognizance of this relic of antiquity. Those engaged in it should be compelled to recognize the requirements of sanitary laws and the advancement of science. Parsimony or ignorance have no right to inflict a nuisance, which is declared to be dangerous to health, upon an intelligent public.

Some modifications of this rude process have been made, as a few of more intelligence have become engaged in the business.

Of these there are three, which have so improved the process as to control the escape of the noxious odors.

As it is the purpose of this report to show by what means the

suppression of this nuisance can be accomplished, my remarks will be confined to these improvements, which, by practical experience at the present time, are found to succeed. No doubt, other methods and improvements will rapidly follow when once it is made the interest of the parties to discover them.

Two of these modifications are accomplished by condensation and deodorization, and another by decomposition and burning up of the gaseous products evolved during melting.

It is necessary for me here to premise, that in all fat or tallow rendering, or oil refining, or bone or offal boiling, the first part of the process should be conducted in steam-tight kettles, tanks or boilers, as in no other way can the escape of the offensive gases or vapor be controlled.

This fact, however, is now proved beyond a doubt—that no chimney can practically be constructed high enough to diffuse these gaseous, noxious effluvia so as to avoid complaints from surrounding neighborhoods. And that these complaints are just and well founded, we have shown by the chemical constituents of which the nuisance is composed.

The majority of fat or tallow melters in this city use open or imperfectly closed kettles, which condition allows this pungent, acrid, irritating odor to escape "*ad libitum*," and although many of them (through a wholesome fear of your sanitary body), have constructed flues from the kettles to carry these vapors and gases into (either over or under) the furnace fire, yet the combustion is so imperfect (being entirely unscientific), that really the effect is, that a more diffusible and pungent odor escapes through the chimney.

The methods which accomplish the suppression or destruction of this great evil in the best manner yet adopted in this city, are these :

The first which I shall describe, has been in practical use for a length of time, is that adopted by Mr. Allan Hay. The business carried on by this gentleman is that of soap and candle manufacture. After various costly experiments and trials, and an extended observation both in this and other countries, he has adopted for his business the following plan :

A steam-tight tank receives the crude, fresh fatty materials, directly from the slaughter-houses ; these are melted by both wet and dry steam, the former within the tank, the latter by an outside jacket ; from this tank an iron tube conveys the vapors and gases

into a condensing apparatus, where they are resolved into the liquid form, which is now conducted into another vessel, and by the use of disinfectants perfectly deodorized.

This process in his hands is admirably conducted and suppresses the nuisance.

The second which I shall describe is that patented and now in successful practice by Messrs. Lockwood & Everett.

They also employ steam-tight tanks, into which the fatty materials are placed.

These tanks are heated by steam, applied upon the outside only.

The deleterious gaseous products are forced, by the pressure evolved within the tank, through an iron pipe connected therewith, and continued into a separate and independent furnace, where by a system of iron coils, which are heated to a red heat, these gaseous vapors are so superheated that they become combustible; when in this condition they are brought by an ingenious and scientific arrangement of argand burners in contact with the flame of the furnace, in combination with sufficient oxygen to produce perfect combustion, and finally passed off by an ordinary chimney without any offensive odor. This process certainly destroys the nuisance, is ingenious, scientific, and applicable to a variety of business, now abandoned, for the want of it, as impracticable. Much valuable material might be reclaimed and become a revenue to the city, as well as profitable to private enterprise, which is now actually an enormous expense to the city to get rid of, without a profit to any one, by adopting these gentlemen's improvements and patents.

The third which I shall describe is that which is now being adopted, and has been in successful use (on trial) by the Butchers' Melting Association. This plan is patented by Mr. Black. This differs in many essentials from either of the others.

A tight cover is applied to the kettle, which allows no escape of steam or gaseous vapor, except through a large chamber, which is so constructed as to form several condensing apparatuses into one continuously.

To this kettle heat is applied by means of a fire underneath instead of steam, with some peculiarities in its application to the kettle. The melting of the tallow, which is performed in a perfect manner, all the water of the fat being driven off with the gases, and by means of the condensing arrangements, so thoroughly washed and diluted as to be lost before coming in contact

with the atmosphere. Having the facilities of a large body of water, this part of the condensation and dilution is easily accomplished. Under other circumstances, as, for instance, where water facilities could not be had so abundantly, the deodorization would be resorted to in addition.

There are some mechanical devices of Mr. Black's used within the kettle which it is unnecessary for me to describe in this special report.

This process effectually rids the community of this great evil. Other modifications are in progress of experiment, but they simply are different suggestions and methods of arriving at the same result, as each finds in his own specialty, or branch of business, some variation or change necessary.

In describing these methods, two distinct and entirely different ways are presented, one by condensation and deodorization, the other by combustion. Both of these are effectual. They perfectly remove all cause of complaint, and rid the community of a dangerous element, which has, beyond a doubt, undermined the health of many of those who have been compelled to endure it.

These two methods, arriving at the one result, may be modified in many ways. The tallow melter, the soap and candle manufacturer, the refiner of oils, and indeed all the various branches connected directly or indirectly with this nuisance, will each find that plan which his interests and specialty require.

In a summary of the foregoing pages, I will briefly say :

The requirement of the Board of Health in its sanitary capacity is, that the nuisance of this escaping noxious effluvia from fat or tallow melting must be entirely suppressed.

By the adoption of one or the other of the modifications herein described, or any other which shall equally accomplish the end, this requirement will be fulfilled.

All who do not comply with these requirements, now it is proved that they can be done, should be compelled to cease the business.

No business detrimental to the public health, and which is carried on in defiance of great sanitary laws, positively neglecting to adopt the remedies at hand, should be tolerated in civilized communities.

Respectfully submitted,

MOREAU MORRIS, M. D.,

*Sanitary Inspector,
Metropolitan Board of Health.*

“L.”

T E S T I M O N Y

IN RELATION TO THE

G A S N U I S A N C E.

A meeting for conference between the Metropolitan Board of Health, and committees of the Citizens' Association, and of the gas companies, was held at the office of the Board, No. 301 Mott street, New York, April 30, 1866, at which were present: President Schultz, Commissioners Stone, Parker and Craue, Engineer Worthen, Professors St. John, Torrey and Doremus; J. H. Adams, President New York Gas Light Company; R. M. Henry; and J. M. Daly, counsel for the Citizens' Association, and many distinguished citizens.

Dr. Parker stated that the question was, first, whether the odor complained of proceeded from the gas-works, and, if so, what steps would obviate the difficulty.

Richard M. Henry, attorney of the Citizens' Association, said that this was a matter in which every citizen was interested, and he was ready to prefer a complaint that this odor was a nuisance deleterious to the public health, and should be abated. Whether the odor proceeded from the gas-houses alone, not being an expert, he could not say.

Prof. R. Ogden Doremus, by aid of illustrations, explained the manufacture of gas, and gave the following as the result of the carbonization of pit coal of good quality:

CARBONIZATION OF PIT COAL.

Coke		68.925
Liquid Products. {	Tar	12.230
	Water	7.569
		19.799
Gaseous Products. {	Light carb'd hyd (C. H. 2)	7.021
	Carbonic oxide	1.135
	Carbonic acid	1.073
	Olefiant gas (C 2, H. 2)	0.758
	Sulphuretted hydrogen	0.549
	Hydrogen	0.499
	Ammonia	0.211
	Nitrogen	0.035
		100,000

Prof. Doremus said, that about a year ago, the Citizens' Association of the Department of Hygiene took up this theme, and he was appointed as one of the committee to investigate the matter, and the result of the investigation was, that certain odors which prevail in parts of our city arise from gas-houses. They had positive evidence of this. He did not appear so much in the capacity of an expert, as of a citizen residing in Fourth avenue, whose olfactories had been disgusted by a peculiar flavor which he thought the citizens of New York ought not to suffer, especially as we have two rivers between which the city is situated. We ought to have as good oxygen as is made. The odor proceeded from the decomposition of coal. Referring to the chart of the carbonization of pit coal, he said the result would vary in every different form of coal. The result given in the chart was according to the analysis of Professor Bunsen. Olefiant gas was commonly agreed to be the chief source of the light. The difficulty was in extracting the sulphuretted hydrogen, which generally possessed a disgusting quality, though the pure had not. But the chief difficulty was, not merely in removing this sulphuretted hydrogen, but in the removal of the substance which has been employed in its abstraction. (The washing process was explained by means of a diagram.) The materials abstracted by this washing process are conveyed to a large tank under ground. The next process is a purification more thorough than water can do it. Water accomplishes this in part, but lime is employed and is chiefly efficient in abstracting this sulphuretted hydrogen. The gas, after purification, passes into the large meter, then into the gasometers, and then to the

reservoirs, from whence it is distributed throughout the city. Particular attention was asked to that portion of the process where lime is employed. When the lime has abstracted a certain quantity of gas, its absorbent power is lost, and it requires to be removed. In its removal was the great difficulty. In taking out the lime richly impregnated with odors, they are conveyed to the atmosphere, and if the wind is east we have the odor from one river, and if the wind is west from the other. This abstraction of gas is performed in another way. In lieu of solid lime, it is mixed with water and bubbled in fine streams so as to be purified. In the city of Boston I have been informed by chemists, that, although the gas burnt in houses is not so pure, they are never troubled with odor from the gas houses. They have not succeeded in bubbling it through and cleaning it as clean as we do.

At my residence the nuisance is not to be expressed. Last Saturday afternoon, while at dinner, the flavor from this gas-house was anything but appetizing, and all the citizens of our neighborhood are constantly complaining, and I believe there has been an effort of the gas-house folks to remove, as far as possible, this nuisance. I understand from consulting chemists, that they have expended a considerable amount of money to accomplish this. That it is accomplished in other cities is a known fact; that it ought to be accomplished in this city, I believe all citizens will agree with me. It is not so much our business to suggest a mode of remedying, as it is to complain of this nuisance. The difficulty is in the removal of the lime which has been used for purifying purposes. This is a general result of the decomposition of coal. If the coal is poor the odor will be increased.

Q. Was the annoyance from this odor, five or six years ago, as great as it is now?

A. I think not to such an extent; at my residence the flavor has been more or less, but I think it has been increased the last four or five years.

Q. Suppose purer coal were used, should we then be annoyed by this odor?

A. I think we would, but not to such an extent as at present. All coal contains more or less of sulphur, and the lime will become more or less impregnated, and when we remove that solid lime we shall have the flavor. Some coal from the north is peculiarly disagreeable. The smell is peculiarly disagreeable, where the sulphur is more prominent than in other varieties of coal.

Q. How was it ten or twelve years ago, when the gas works were being established? Was there any offensive odor then to be perceived?

A. Yes, sir. Of course the companies make up a much larger amount of gas now, than then, and that would make a difference. I have not analyzed the coal they use in gas factories. I suppose they use several varieties of coal. Coals abounding in sulphur are very prone to spontaneous combustion. This occurs at mines, and where it is piled up. There is a liability to explosion, which is a serious objection to burning these products. There are cities in the world where gas is burned, and where the streets are not perfumed as they are in New York.

J. H. Adam, President of the New York Gas Light Company, said: Dr. Torrey is here, who has made many experiments for the Manhattan Gas Company, including the best mode of avoiding that odor. The suggestion of Prof. Doremus should be taken into consideration as to using the wet-lime process and the dry-lime process. There are many volumes concerning investigations into the causes and remedies for the smells of London; though not a practical chemist, I have taken a good deal of interest in the matter, and have read pretty much all that has been written upon it. The dry-lime process was adopted in London, after the wet-lime process had been abandoned, at the earnest solicitation of men who had investigated this subject for a series of years, and I believe, to-day, in the city of London, the process which we now use here, is adopted with very little modification. I have not been there; I only know from the perusal of books. The process which has been referred to, is simply to open boxes that contain, I should say, about 200 cubic feet of material (lime). If the odor of this small proportion of sulphuretted hydrogen shall permeate the city, we must suppose a small box of that size, of diffusive power sufficient to come in contact with many millions (feet) of atmospheric air. How far that is the case, we do not know. We are ready to do anything the committee may suggest. We are willing to spend any amount of money. But there is the practical fact, that we are obliged to consume a large amount of coal upon New York Island, and in consuming it, of course, the vapors arise into the atmosphere. I doubt very much whether all the odors from the gas-works, proceed from the purifiers. At all events, we shall be ready to adopt anything that is practical, under the direction of this Board. There has been a great deal

of charlatanism on this subject. I am quite intimate with the president of the Boston Gas-Works; I have had many interesting conversations with him upon this subject, and after a careful investigation, I am satisfied that it is by no means certain, that we shall gain by adopting the process pursued there. On the contrary, if I am controlled by any books on the subject, and of evidence under oath before committees of Parliament, I should hesitate a good while as to the change.

Q. Is the coal used now, different in general character from that used four years ago?

A. The kinds of coal we have used since the war, require for their purification, I should judge, about one-tenth more lime. In other words, the changes in those boxes, once or twice a week, oftener than they would be, if we used the other coals. They are opened a little oftener.

Q. How often do you change those boxes?

A. There is a variation on account of the size of the boxes. During winter, when the largest amount of gas is passed through these boxes, they are opened at intervals of ten hours, I should say. The lime is supposed to take away from the gas its sulphur, and become sulphate (?) of lime. And if the process is pure, it is a conversion of carbonate of lime into a sulphate (?).

Q. Do you believe the trouble is occasioned by removing these lime boxes?

A. I think not.

Q. What is it?

A. I think it is the combustion of the immense amount of fuel. On that subject I am not sure, but there is a little manufacturing establishment within a square of us, engaged in manufacturing stained glass. The very same odor that is complained of as coming from the gas-works, arises from that little manufactory, and permeates several private houses, in the next block where I reside. My attention was called to it by several of our neighbors. I expect that much of this odor comes from the combustion of fuel. It may not be all. There is no practical remedy that I could suggest, except to remove them from the habitations of men. I cannot conceive it possible that so small a cause in space (as this lime), could permeate so wide a space.

Q. Have you ever been in Birmingham?

A. No, sir; I have never seen any of the English works. It is not offensive at the point where these boxes are opened, and while

the odor is very perceptible, it is not precisely the odor that annoys us in New York city.

Q. In changing these boxes do you shut off the gas for the time being?

A. Yes, sir.

Q. I went to the gas-works and they were changing the boxes. It was perfectly cool and not offensive, to be spoken of; but at a subsequent time we found the lime was hot and it was offensive.

A. That lime had been more thoroughly saturated.

Q. Is there any means of cooling that lime before removing it?

A. A larger number of boxes probably—if that is the difficulty—to shut them off and leave them closed for one, two, three, or four days. That would be merely a mechanical thing. If this gas arises, particularly when there is a very high temperature, that could be avoided by increasing the number of boxes. If the increase of the capacity of the purifiers in size or number would relieve us from the nuisance, we should be ordered to increase them. The water all passes down into a sewer of our own, from which it is pumped up.

Q. That is very offensive I suppose?

A. I do not think so. I do not think pure ammonia is very offensive. The odor arising from this water in a little space five feet square is very offensive. We have a drain of our own from the works, and so have all the works. The tar which is a merchantable article, is pumped into tanks, which take a different direction. This water (ammoniacal?) is what separates by mere specific gravity.

Q. Your drain is not the Croton drain?

A. No, sir; has no connection.

Q. How far does that go into the water at low tide?

A. I do not know; my recollection is, about one-half, at low tide. I doubt if there is depth of water to take it below the water line. The mouth of that drain might be so managed as to carry it. The top of it would remain exposed. I should judge the drain was five feet high, and about four or five feet wide.

Q. If there are odors from the sewers, they cannot come from your drain?

A. No, sir.

Q. Do you use a large quantity of anthracite for heating?

A. No, sir. We use coke. There is a trace of sulphur in it. The quantity of fuel used is very large.

Q. Have you ever noticed the odor spoken of, and then passed to the gas house and found the boxes open.

A. I have, and found them shut. There is an odor, I confess. There is one particular odor which there can be no doubt of.

Q. What do you suppose the remedy is?

A. I doubt if it is practically possible to burn 250,000 tons on the island, without having some gas.

Q. Is not your coal inferior?

A. In what respect? It is a purer coal—to make a better gas—than we used three or four years ago. It contains sulphur enough to require an additional purifier. We have 20,000 tons of coal—have 40,000 or 50,000 tons (contracted?) The average quantity of sulphur will probably be less this year than last.

Q. Is all this Pennsylvania coal?

A. We burn coal from Liverpool, from Newcastle, from two or three mines in Nova Scotia, from Pennsylvania, and possibly, shall burn some from Virginia.

Q. Take the best coal—take Cannel coal—would not that be a remedy?

A. No, sir. There is a certain quantity of sulphur in Cannel coal. Supposing all the odor comes from the purifying boxes, it would diminish the number of these required, in a month.

Q. These fumes are passed through lime boxes, and carried into the chimney?

A. The fumes arising from opening the purifiers, after they are somewhat cool, escape into the air, and after the expiration of two or three days the odor in the lime has departed. The lime is carried down on the wharf. The evolution there is practically nothing.

Q. What do you do with your running water?

A. It is kept entirely under cover.

Q. That is offensive?

A. Not particularly so; I am speaking of Twenty-first street works. That is carried underground to a tank which is tight, which is pumped up into barrels, and there is no odor there.

Q. Do you consider your works as perfect as the Manhattan?

A. I do.

Q. Why did the Manhattan works build a chimney?

A. They have tried many experiments. My company is the "New York."

Professor Torrey said : It is admitted, that the odor that escapes from those lime purifiers is not at all pleasant. When, Friday, some members of the board visited those gas-works, I happened to be present. When they had gone through the works, they were requested to step across the way where there was a manufactory of ammoniacal preparations, which are made from waste liquids in one part of the process. There happened to be at the same time also, a sloop, that was made in the form of a tank, which was discharging its ammoniacal water through a hose into this factory—brought around from the other part of the town. The odor from those works was believed to be intolerable, more intense than anything that escaped from the building across the street—the gas-works. Still it is admitted—there is no doubt about it—that the changing of the lime is an unpleasant operation—that there is a gas given off which is disagreeable even to a chemist.

Q. You have no question but that makes the smell in the street; it does not arise from the ammonia factory?

A. That depends upon which way the wind is. Vapors pass up through the chimney, and are diffused through the atmosphere. I recognize them, and can distinguish them. Chemists are able to distinguish between odors, when others cannot do so. It is admitted, I say, that there is a sufficiently bad smell comes from those purifiers. The company have been exceedingly desirous to get rid of this—to make the works as little a nuisance as possible. They have come to me time after time; they say: "We have no objection to going to any amount of expense to correct the evil," in taking the covers off these great purifiers, about one-half the size of this room. The lime is saturated with these bad odors, and it is already full of unpurified gas. They do not stop to take out the lime, until the lime refuses to take up more. This was always unpleasant to the men; not only the bad smell, but the gas itself was poisonous. The pure gas, when rendered almost inodorous, is a poison. To obviate this, the company got a chimney down to the end of the dock, and a long pipe leading to it; then, with their steam-engines, they worked pumps which exhausted the foul air, and sucked down atmospheric air from outside, for several hours before they lift the covers. This air was driven down, and they thought this chimney was high enough to diffuse it, so that it would be nearly imperceptible. But it seems that it is not the case. They tried to burn it. But this gas, though it

burns at a certain point, when it comes in contact with atmospheric air, produces combustion. Perhaps, however, arrangements might be made to hinder that. They are now engaged in a series of experiments under my direction, to pump out this gas, and to burn it without any risk. These experiments are now in progress. Immediately after the Board visited them, the order was given to have the experiment made. In a very few days we shall know whether the experiment succeeds. If it succeeds, it will be adopted at any cost. I do not say there will not be a smell, but so mitigated, it will not be a nuisance. Like many other things carried on in our city, you cannot make it wholly agreeable, but it can be prevented from being a nuisance. We know that persons get accustomed to a very moderate amount of evil. Still it is my belief, that the company are quite as desirous as the public are, to remove this nuisance, and have authorized the gentlemen of science they consult with, to devise any method that is likely to succeed.

Q. Suppose we should advise Newcastle coal, would that remedy the evil?

A. No, sir, for no coal is without sulphur. We would not have to change the lime so often. It might reduce the evil one-third, perhaps a little more.

Q. The gentleman who spoke before you (Mr. Adams, president of the New York Company), said it was not entirely the removal of the purifiers that caused the bad odors, but the burning of coal under retorts. Is that so?

A. No, sir. I do not think so at all, because if that were so, the whole city would be infected, because we are burning a great amount in other ways. I do not think that obtaining other coal would remedy the evil. Every coal on being purchased, is submitted to a chemist to be analyzed. It is the interest of the companies to get coal as free from sulphur as they can; because in the one case, it costs so much more to get lime to purify it.

Q. It seems there is no coal which may be used for making gas, without more or less sulphur?

A. None, that I know of.

Q. As a citizen of New York, what would you suggest?

A. First, the coal free from sulphur.

(NOTE.—The last answer may not have been apprehended by the reporter).

Q. And second, you would go on with the experiments?

A. Improve the process of purification.

Q. Suppose you have got this coal, would not an increase in the number of purifiers, the number of boxes of lime, make the coal-gas less offensive?

A. Would not have to shut them off as frequently. But there is so much sulphurate to be got rid of, so much gas to be made. The thing is always greater in the winter. There are more people, especially those who live on the avenues. It is found that gases are diffused from the top of the high chimneys. The chimneys in Glasgow are about 450 feet high. If built so here, the people of Brooklyn and Williamsburgh would have the smell. We propose to destroy it, not to throw it into the air at all. That is the true remedy.

Q. Suppose you could get it up 450 feet?

A. It is light, but still the law of the diffusion of gases is inexorable.

Q. Suppose you allow the lime to absorb one-third of the sulphur that escapes; suppose the boxes were changed oftener?

A. There are certain compounds of sulphur which lime will not remove. What is called bisulphite of carbon—that remains in the gas—a good deal of it. We have here, far less than the minimum amount in the London gas. They consider their gas very pure if it contains but 12 to the 100 feet. Ours always contains a little less than 4 to 100 cubic feet; and often very much less than that; so it is difficult to detect it. The purifiers get heated by exposure to air. I have known a purifier to get on fire. By getting rid of the bad gas, and then shovelling out the lime as quick as possible, it will not get hot. But merely letting it rest an hour or two after the covers are open, it will get hot by absorbing hydrogen from the air.

Q. Does Cannel coal produce any coke?

A. Yes, sir. But it cannot be used by itself. It must be mixed with bituminous coal.

Q. Is not it a temptation to the company, to use coal that shall produce a great deal of coke?

A. They are obliged to use coke under their furnaces. They burn up a good proportion to heat their retorts.

Mr. Adam—The price of Nova Scotia coal is a little less than two dollars. A duty of one dollar and twenty-five cents per ton has been put on, which, of course, will raise the cost. The cost

at the mines has been reduced about forty cents. If the lime is half charged, it will be less offensive than if fully charged.

Q. If you had more boxes, would it not be a remedy?

Prof. Torrey—It would come to about the same thing. Surely, two halves are equal to a whole.

Q. Is there not some bad management in changing those boxes, which makes them offensive?

A. Not that I am aware of, because the police is strict. They are watched day and night, and any violation of duty is at once noticed. The direction of the wind makes all the difference in the world.

Q. If the company should have more purifiers and raise their chimney three hundred feet?

A. I do not think it would make any difference at all. It would just carry it a little further. As I said about removing the foul air from the purifiers, if our experiment does not succeed, we are instructed to go on and try other things.

Mr. Adam—The evil has been discussed the last ten years.

Q. I do not see from your answers, that there is anything to be done except to change the coal?

Prof. Torrey—I do not see that that will do much, except to diminish the evil, from twenty to thirty per cent. That is a matter that does not come under my especial notice.

Mr. Adam—It would make one change less in sixty hours. Sixteen candles, is about the best coal we make in practice.

Prof. Torrey—The Manhattan is instructed to make sixteen candles. It is usually between sixteen and seventeen. It is tested daily and recorded, so any one can see the record by calling at the office.

Mr. Adam—It would be impracticable for the companies to rely upon one line of railroad for their supply of coal. They must rely upon the best markets. The only road to cheap gas in New York, in my humble judgment, is to stimulate the use of coals near the water, that can be brought to this market by the sailing vessels. The Nova Scotia coal has much less sulphur now, than four years ago. The Province coals, as you go down deep, run parallel to, and are like the English coals. Near the surface, they contain a large amount of sulphur. Deeper, less. When coal is cheap, and the gas companies charge less for gas, they make the most profit. Very little Breckenridge coal is brought to this market.

Mr. Detmold said, he had suffered from the bad odor that escapes from the gas-houses. It is from sulphuretted hydrogen. You need but expose a small piece of silver, and it becomes black. Formerly, this smell was not much perceived. Six or seven years ago, we scarcely knew it; gradually it has developed itself, and of late, continuously, which shows me, that the growth of this nuisance, is in British Province coal. I believe there is as good coal on this continent, as has formerly been used for making gas.

Mr. Adam—In reference to the subject of spontaneous combustion, there is no bituminous coal not subject to it. There is no coal I have put in my yard in large quantities, that has not been on fire.

Prof. Torrey—All coal-heaps left alone, will get on fire; as to the quantity of sulphur in coal, you can get at it very clearly by the quantity of lime required to purify it. I think the coal used the last two months has had more sulphur in it. They are obliged sometimes to take what they can get, the quantity is so large.

Q. Why could not these gases be burned?

A. For this reason—when mixed with atmospheric air, they are liable to combustion. In one case, it blew a roof off a building.

Q. You say in three or four days this experiment will be tried. If successful, how long will it take to apply the principle to your gas-works and to the gas-works of New York?

A. That is a question for the engineer. It would take weeks.

Q. Then I understand you, you will have come to a conclusion in three or four days, and if successful, it can be applied in a few weeks to all the gas-houses.

A. It can be to ours. Wet lime is about of the consistency of the whitewash they use. That has a good deal of lumping. If this milky substance flowed into the rivers, I am afraid it would prove a nuisance along the shores.

Q. Would you suggest the removal of that sulphate of ammonia factory opposite the gas-house?

A. I do not feel authorized to give an opinion, except that it is certainly a nuisance.

Q. It has no necessary connection with the gas-works?

A. No, sir. The refuse matter don't pay the expense of cartage.

“M.”

CHOLERA AT WARD'S ISLAND, 1865.

REPORT

OF

SANITARY COMMITTEE.

The late resident physician of this city, by letter to the public and to this Board, has declared, “that there was no case of cholera, during the period mentioned, in any of the various hospitals at Ward’s Island, and, as he is informed, none have occurred since; that he had carefully examined every case there sick with the supposed cholera, and found the peculiar symptoms of cholera, muscular cramps, loss of elasticity in the skin, rice-water discharges, suppression of the urine, &c., &c., absent in every case, and that he had taken careful testimony of all the cases which had died of the supposed disease, and satisfied himself that no case of cholera had occurred there, and so reported to the Commissioners of Emigration, and also to the Commissioners of Health.”

Your committee would be satisfied with presenting the general facts to your notice, were it not that *past official position* might give some importance to the communications referred to. Two members of your committee, Drs. Stone and Crane, visited Ward’s Island, on Saturday, the 21st of April, and beg leave to report in detail.

In the annual report of the State Emigrant Hospital, under date of January 1st, 1866, Dr. George Ford, physician-in chief, remarks.

as follows: "Diarrhœa and dysentery were much more prevalent than in former years, but did not appear of an epidemic or fatal character, until the rainy period, which occurred in November, 1865, when it assumed an epidemic or choleraic type. On the 22d of November, the first fatal case was recorded, followed daily by others, until the middle of December, when it mitigated, owing probably to the favorable change which had previously taken place in the weather, and the sanitary measures then adopted to arrest it; still it continued in the same building in which it commenced, up to the 20th of December, when it entirely ceased. There were thirty-one cases of this epidemic, of which twenty-seven died. The period of time that elapsed from the commencement of the fatal termination varied from twenty minutes, the shortest, to six days, the longest; but the average in all was about forty-six hours. Nearly all occurred in the same building; nearly all were women or children, as the building was appropriated to patients of that class, and nearly all were laboring under acute disease or convalescent from it." The doctor further says: "The epidemic, as you may perceive, lasted about a month. the deaths averaging about one a day. Now, that the danger is over for the present, and the fear of creating unnecessary alarm, I deem it my duty to state these facts, in order that we may be prepared for its early recurrence in a less doubtful form. From this, I think it manifest, that there is a predisposition in the public health to be influenced by epidemic disease, if only time and circumstances favor its development." Through the courtesy and kindness of the Commissioners of Emigration, Dr. Ford and Mr. Fagan, your committee has had access to the "*Death Book*," and has taken careful notes of some seventeen cases, as they were there inscribed at the time of death, deeming that this number is quite sufficient fully to establish the character of the disease.

CASE I.—L. S., æt. 7 years, convalescent from typhoid fever, attacked with vomiting and rice-water purging, died in twenty minutes.

CASE II.—M. G., æt. 5 years, dysentery, died with symptoms of cholera.

CASE III.—J. Webb, æt. 10 years, typhoid pneumonia, died in thirty-six hours after symptoms of cholera.

CASE IV.—Ann S., æt. 40 years, died in twenty-four hours, recorded by Dr. Gulick as cholera.

CASE V.—Mary Ann Nabelee, æt. 28 years, recorded by Dr. Gulick as cholera.

CASE VI.—Ann Park, æt. 17 years, convalescent from typhoid pneumonia, attacked with vomiting and purging, died Nov. 26th, in nine hours.

CASE VII.—Bridget O'Brien, æt. 28 years, gastro enteritis (admitted Nov. 13), Nov. 25, rice-water discharges, died in twenty-four hours, sclerotic black, and, on post mortem, chronic peritonitis.

CASE VIII.—Gaschel Blume, æt. 28 years, admitted Oct. 7, took sick Saturday night, Nov. 25, vomiting and purging, cold skin, tongue cold, died Nov. 28.

CASE IX.—Veronica Gunther, æt. 25 years, died Nov. 28, symptoms of cholera, seized 24th.

CASE X.—Johanna Rayner, æt. 28 years, admitted Nov. 16, died Nov. 29, after twenty-four hours' illness, symptoms of cholera.

CASE XI.—Eliza Hope, æt. 7 years, admitted Oct. 4, with typhus fever, died Nov. 30, cholera symptoms (Dr. Gulick).

CASE XII.—Barbara Auger, æt. 29 years, admitted June 27, attacked with vomiting and purging, died in 7 hours (Dr. Gulick).

CASE XIII.—Ellen Howley, æt. 16 years, admitted Oct. 4, with typhus fever, rice-water vomiting and purging, on the 27th Nov., at 3 P. M., fell into collapse, never rallied, and died Dec. 2, at 8 P. M.

CASE XIV.—Mary Costellow, æt. 24 years, admitted Oct. 7, died Dec. 3, after vomiting and purging for twenty-four hours; upon post mortem examination, rice-water discharges found in the intestines.

CASE XV.—Cath. Dean, æt. 27 years, admitted Dec. 1, maculated typhus, going on well till 9 A. M. of Dec. 6, attacked with vomiting and diarrhœa, became collapsed, and died in nineteen hours, post mortem, ten hours after death. body rigid and warmer than before death, apparent exudation of pigment through sclerotic coat, eyes and features sunken and livid, small intestines contained thick, gruel-like substance, the large intestines contained rice-water, except the rectum, which was empty; mucous membrane soft and injected, other organs examined, healthy.

CASE XVI.—Jacob Schwart, æt. 30 years, admitted Dec. 9, died on the 9th, complete suppression of urine, blue, collapsed and cold, admitted from barracks, work in graveyard burying

dead, rice-water in intestines. Patient denied that he had vomiting or purging.

CASE XVII.—Mary Taylor, æt. 19 years. admitted Oct. 10, typhoid fever, died Dec. 10, convalescent two weeks, rice-water discharges Dec. 6, died 9 A. M., Dec. 10, usual symptoms of cholera upon post mortem.

Upon further inquiry, your committee ascertained these general facts from Drs. Ford and Gulick, viz. :

The discharges generally were rice-water in character. Violent cramps were not so marked as in past epidemics. Still, most of the patients suffered from abdominal spasms, and some from muscular spasms of the extremities. All died in a collapsed condition, excepting a few who rallied to die from secondary fever. Eyes and features sunken, and skin livid and bluish in all cases. In some cases the skin presented the corrugated and parboiled appearance of the washer-woman's hand. Exalted temperature of the body was not generally looked for, but was noticed in one case ten hours after death. *Suppression of urine* was noticed in all cases.

Dr. Ford says that : "Rice-water discharges were found in the intestines in about two-thirds of the cases after death, cold tongue, and coldness of surface in most cases. It was my opinion at the time that these cases were Asiatic cholera. *It is my opinion still*, and their history corresponds with my observations in all past epidemics of this disease, which I have witnessed. This fact I particularly noticed : these patients had had no communication with the Atlanta or cholera patients then at Quarantine."* Dr. Gulick says that : "Rice-water discharges were found in the intestines in all the cases which he examined, mixed or tinged with bile." Dr. Gulick regarded these cases *at the time* as cholera, and so registered them in the death book. Since then he has changed his opinion, and considers them as acute Bright's Disease in the second stage. Still he admits that such an epidemic, and characterized by such symptoms, is most remarkable, and a thing unknown and unprecedented in the annals of medicine. From an analysis of the foregoing facts, your committee presents the following *summary and opinion* :

The epidemic now in question was preceded by an unusual prevalence of dysentery and diarrhœa. Beginning on the 22d of

* It has now been ascertained that the disease was brought to Ward's Island by a patient from the Atlanta.

November (the date of the first fatal case), it continued until December 20, when it ceased upon the advent of cold, frosty weather. The whole number of cases was 31, of which 27 died; the duration of the disease varying from 20 minutes to 6 days, giving an average to each of 46 hours. Most of them were women and children, suffering from acute disease, or convalescents (principally from typhoid fever), and most of the cases occurred in the same building.

Symptomatology of cases was as follows :

The attack was ushered in by vomiting and rice-water purging, followed in all the fatal cases by abdominal cramps of no very severe character, sunken eyes and features, bluish livid skin, cold tongue, suppression of urine, and collapse. In some of the cases there were muscular spasms of the extremities, and corrugated, parboiled skin. Upon post mortem examination there were found rice-water discharges in the intestines, Bright's Disease of the kidneys, in the second stage (so called?), and, in one case, elevation of the temperature of the body above that which existed during life.

The opinion of your committee is, that the symptoms in the cases reported, were characteristic and pathognomonic of epidemic Asiatic cholera.

JAMES CRANE, M. D.,

JOHN O. STONE, M. D.,

Sanitary Committee.

I concur in this opinion.

WILLARD PARKER, M. D.

“N.”

C I R C U L A R S

UPON THE

PREVENTION AND TREATMENT OF CHOLERA.

CHOLERA.

THE METROPOLITAN BOARD OF HEALTH publish this simple statement, and beg the public to give to it their earnest attention:

Cholera is generally a preventable disease, and in its early stages can be arrested, if the habits be good. Study, therefore, temperance in eating and drinking; do not believe that alcoholic stimulants are useful in guarding you against an attack. Let the food be nutritious, and keep the digestive organs in a healthful condition. Use no stale or uncooked vegetables. Let your meat be fresh, and your vegetables be well cooked, and all fruits be fresh and ripe.

Cleanliness of the body is of the first consideration. Keep the skin in a healthy state by bathing the whole body, with a free use of soap. Cold bathing is best used in the morning; never just before going to bed. Dry frictions or the warm bath, may be more safely used just before going to bed.

Cleanliness in your homes, is of equal importance. Let your apartments be dry; never damp. Suffer no decayed vegetables or stagnant water to remain in your cellars or yards. Any disagreeable smell from privies, cesspools or sinks, is a proof of their unhealthfulness. Remove them by necessary repairs, lime, chloride of lime, or whitewashing. Ventilate well your houses and apartments. Expose your bedding to the air and sun. Avoid excessive fatigue. Keep regular hours in eating and sleeping. Wear flannel next to the skin. A good plan is, if the bowels are at all disordered, to wear a broad band of flannel (a belly band) around the body, reaching from the hips to the ribs.

Maintain the natural temperature of the body by sufficient clothing; especially keep the feet warm. Never, when heated, sit on the grass or stone seats, or sleep under an open window. If exposed to wet, change your boots and clothes as soon as possible.

Take no purgative medicines, except by direction of a physician.

By order of the Metropolitan Board of Health.

EMMONS CLARK, *Secretary*.

TREATMENT OF CHOLERA.

Cholera is almost invariably preceded by a painless diarrhœa, and this is in all cases to be promptly treated.

When diarrhœa is present, go to bed and maintain a position on the back; use abundance of blankets, and send for a physician.

A physician can always be obtained by applying to the nearest police station.

Stay in bed until you are well; do not consider yourself well, until you have had a natural movement from the bowels. Abstain from all drinks. Apply mustard plasters to the bowels. ,

In the absence of a physician, an adult can take ten drops of laudanum and ten drops of spirits of camphor. A child of ten years, may take five drops of laudanum and five of camphor. A child of five years, may take three drops of laudanum and three of spirits of camphor; and these doses may be repeated every twenty minutes, so long as diarrhœa, or pain, or vomiting continues.

This will save time, but in all cases send for a physician.

Do not get up to pass the evacuations, but use the bedpan or other conveniences. Never chill the surface of the body by getting out of bed.

Remove, immediately, all the evacuations from your rooms. Scald all the utensils used, or disinfect them with chloride of lime; scald also your soiled clothing.

By order of the Metropolitan Board of Health.

EMMONS CLARK, *Secretary*.

LAWS OF NEW YORK.

CHAPTER 74.

AN ACT to create a Metropolitan Sanitary District and Board of Health therein, for the Preservation of Life and Health, and to prevent the Spread of Disease. Passed February 26, 1866, three-fifths being present.

The people of the State of New York, represented in Senate and Assembly, do enact as follows :

SECTION 1. So much of the territory of the State of New York, and of the cities, villages and towns thereof, as now compose the Metropolitan Police District of the State of New York, shall constitute, and is hereby declared, a district to be known as "The Metropolitan Sanitary District of the State of New York."

SEC. 2. Within fifteen days after the passage of this act, the Governor shall nominate, and by and with the consent of the Senate, shall appoint four suitable persons, residents of said district, three of whom must be physicians, and one of whom shall be a resident of the city of Brooklyn, who, with the Health Officer of the port of New York for the time being, shall be sanitary commissioners in and for said district; and the said Sanitary Commissioners, together with the Commissioners for any time being, of Metropolitan police (not exceeding four, and being the present four and their successors), shall constitute a board of health for the said Metropolitan Sanitary District, and said board shall be denominated "The Metropolitan Board of Health;" any five members of which, at any regularly called or adjourned meeting, shall organize and constitute a quorum for the transaction of business; and the phrase "said board," or "the board," when used herein, unless clearly referring to some other body, shall be construed to mean said "The Metropolitan Board of Health," and the phrase "said District," or "the District," unless the same clearly refers to some other district, shall be construed to refer to said "The Metropolitan Sanitary District of the State of New York." And

the term "Sanitary Commissioners" shall refer to the members of said board who are not also members of the Board of Police, and whenever the words "police," "Board of Police," or "Police Commissioners" are used in this act, they shall be taken and construed to mean the "Board of Metropolitan Police Commissioners of the Metropolitan Police District of the State of New York," and whenever the words "place, matter, or thing," or either two of said words, are used in this act, they shall, unless the sense plainly requires a different construction, be construed to include whatever is embraced in the enumerations with which they are connected in either and both clauses of the fourteenth section of this act.

SEC. 3. The said four persons so appointed shall hold office as such sanitary commissioners respectively for the terms following, namely: One for one year, one for two years, one for three years, and one for four years, and until their successors are appointed and qualified. Immediately after the appointment of said four persons as aforesaid, they shall meet in the office of the Secretary of State, and shall proceed, under his direction, to determine by lot which of them shall hold, for the respective terms of one, two, three and four years, the said office of sanitary commissioner. Immediately, and before entering upon the duties of the office, they shall take the oath prescribed for State officers, by the constitution of the State, and shall file the same in the office of the Secretary of State, who, upon receiving the said oath of office, shall issue to each of said commissioners a certificate of appointment for his respective term of office so determined as aforesaid; upon receiving which they shall severally be and become sanitary commissioners, and shall possess and exercise the powers and perform the duties of said Board as defined in this act.

SEC. 4. The term of office of each of said sanitary commissioners, after the expiration of the terms aforesaid, shall be four years, and they shall be appointed upon the nomination of the Governor, by and with the advice and consent of the Senate. Any vacancy that may occur by reason of death, resignation, removal from office, or otherwise, shall be filled in like manner. But if any vacancy shall occur during the recess of the Senate, the Governor may fill such vacancy by appointment, and the person so appointed shall hold office until twenty days after the next meeting of the Senate.

SEC. 5. Immediately after the four appointed sanitary commissioners shall have taken the oath of office as above provided, they

shall meet with the Commissioners of the Metropolitan Police, and the Commissioners of the Metropolitan Police with them and the Health Officer of the port of New York, and organize as a Board of Health by electing one of said Board to be president, and one of said Board to be treasurer thereof, and by appointing a proper person to be secretary of said Board. And the successive presidents of said Board of Health shall be annually elected by the said Board from the members thereof, and the successive treasurers shall be members of said Board; but the secretary shall not be a member of the Board. The treasurer and secretary shall respectively continue in office as such, until removed by the election of a successor or otherwise. The said sanitary commissioners shall each receive a salary of two thousand five hundred dollars a year; and each police commissioner, who may be a member of said Board of Health, and the Health Officer, shall as such, receive a salary of five hundred dollars a year; and the member of said Board of Health who acts as treasurer, shall receive an additional compensation of five hundred dollars a year for his services as treasurer. All salaries allowed under this law shall be payable as the Board shall provide. But for every regular or special meeting of said Board, which any sanitary commissioner or the secretary shall fail to attend, there shall be deducted from the salary of the person so failing the sum of ten dollars; and for every failure of a police commissioner, or of said Health Officer, to attend any such meeting, there shall be deducted from his said salary the sum of two dollars; and it shall be the duty of the treasurer to see that all such deductions are made before payments of said salaries. The Board may appoint a corresponding secretary at an annual salary not exceeding one thousand dollars.

SEC. 6. The president of the said Board shall preside and preserve order at the meetings of the Board; and in case of the absence or inability of the regular secretary to attend, he shall appoint a secretary *pro tem.*, who, for the time being may perform any duty of the secretary. The president shall have all the power and authority given to the "city inspector" in the six hundred and forty-sixth chapter of the laws of eighteen hundred and sixty-five (passed May first, eighteen hundred and sixty-five), in respect to the making, awarding, or executing of a contract or contracts for street cleaning, or any matter thereto pertaining. But nothing herein contained shall be construed as affecting, in any manner, the validity of any contract heretofore made by virtue of said act.

And the Board, at any time, in the absence of the president or secretary, may elect a president or secretary *pro tem.* from their number, who shall exercise the powers of such officers respectively. The secretary shall, subject to the direction of said Board, keep and authenticate its acts, records, papers and proceedings, preserve its books and papers, conduct its correspondence, and aid in accomplishing the purposes of this law, as the Board may direct; and said officer (as well as the other officers and agents appointed by said Board), shall be subject to removal by the Board for cause, to be entered in its minutes, and said Board may appoint his or their successor; and his salary, to be fixed from time to time by the Board, shall not exceed three thousand five hundred dollars annually. Said Board may design and adopt a seal, and use the same in the authentication of its orders and proceedings, commissioning its officers and agents, and otherwise, as the rules of the Board may provide.

SEC. 7. The treasurer of said Board shall be the fiscal officer of the Board; he shall hold, and, on check and voucher, duly disburse, as said Board may order, and for the purposes of, and in conformity to, this act, the moneys he may receive, or belonging to the fund herein provided; and shall deposit the same when paid to him by the treasurer of the State of New York, or otherwise, and pending the regular disbursement thereof, in a bank or banks of the city of New York designated by such last named officer. He shall execute a bond, with not less than two sureties, conditioned in a penalty of thirty thousand dollars, to the people of the State of New York, for the faithful discharge of his duties as such treasurer. The sureties, not less than two in number, shall justify before a justice of the supreme court, in the aggregate in a sum not less than twice the last named amount; but before the said treasurer shall enter upon his duties, the said bond shall be approved by, and filed with, the Comptroller of the State. The treasurer shall keep, or cause to be kept, books showing all his receipts and payments, and shall preserve his vouchers therefor; and should any collections ever be made on such bond, or in suits or proceedings, or otherwise, by said Board, the amount thereof shall be received and accounted for by the treasurer, or in case of collection on his bond, by the recipient thereof, to the State Treasurer, and be deposited in the bank or banks aforesaid, applied

for the legitimate uses of said Board, or as herein elsewhere provided.

SEC. 8. Any sanitary commissioner of said Board who shall accept or hold any political or municipal office during his term of office, or shall be publicly nominated for any office elective by the people, and shall not, within ten days, succeeding his knowledge thereof, publicly decline the said nomination, shall in either case, be deemed thereby to have vacated his membership of said Board, and the vacancy so created shall be filled, as is provided as to other vacancies ; but membership of this Board shall not affect membership in the board of police or the office of health officer.

SEC. 9. Any member of the said Board may, at any time, be removed from office by the Governor, under the provisions of the laws relative to the removal of sheriffs from office, which provisions are hereby extended so as to relate to the members of said Board; but before such removal, such member shall be served with specific charges, stating the dereliction of duty complained of, and shall be afforded adequate opportunity to publicly answer the same and make his defence thereto, upon reasonable notice to be given him; and on the application of the Governor, or the party charged, any judge of the supreme court shall have as full power and authority to compel the attendance and examination of witnesses, touching such charges or defence, and the production of books and papers relating thereto, at the place and time where the aforesaid proceedings or hearing may take place, as is given herein in respect to the examination of witnesses, or the production of papers, on the application of said Board, in the fourteenth section of this act. And it shall be the duty of such judge (and of any other judge named in said section) to exercise such authority, and to take or supervise the taking of such examination to be used upon the hearing of such charges and defence. And if, by removals or other cause, the members of the Board shall be less than five (but not less than three), the existing members shall still constitute a Board, competent, by unanimous action, to exercise the powers delegated by this act.

SEC. 10. Said Board shall have power to create a chief executive office, and appoint a suitable person to fill such office, who shall be an experienced and skillful physician, resident in said district, whose full name of office shall be, "The Sanitary Superintendent of the Metropolitan Sanitary District of the State of New York," but he may be designated as "Sanitary Superinten-

dent." It shall be the duty of said officer, as he may be directed, to execute, or cause to be executed, the orders of said Board, and generally, according to its instructions, to exercise a practical supervision in respect to the inspectors, agents and other persons (other than the secretary, treasurer and members of the Board, or the members of the police force), who may exercise any authority under this act; and said officer shall devote his services to the aforesaid purposes as the Board may, from time to time, direct. He shall be entitled to receive a salary, to be fixed by the Board, which shall not exceed five thousand dollars annually. Such superintendent shall make reports weekly, or oftener, if directed by the Board, in writing, stating generally his own action and that of his subordinates, and the condition of the public health in said district, and any causes endangering life or health that have come to his knowledge during said period. And said Board may appoint two "assistant superintendents," one of whom shall be a resident of the city of Brooklyn, and shall principally perform his duties in that city, whose duties shall be of the same nature as those of the last-named officer; and their salaries, not to exceed thirty-five hundred dollars a year each, shall be fixed by the Board.

SEC. 11. Said Board may appoint and commission such number of "sanitary inspectors" as the Board may deem needful, not exceeding fifteen, and, from time to time, prescribe the duties and salaries of each of said inspectors, and the place of their performance (and of all other persons exercising any authority under said Board, except as herein specially provided); but at least ten of such inspectors shall be physicians of skill and of practical professional experience in said district, and the residue thereof shall be selected with reference to their practical knowledge of scientific or sanitary matters, which may especially qualify them for such inspectors. Each of such inspectors shall, twice in each week, make a written report to said Board, stating what duties he has performed, and where he has performed them, and also such facts as have come to his knowledge, connected with the purpose of this act, as are by him deemed worthy the attention of said Board, or as its regulations may require of him; and such, and the other reports herein elsewhere mentioned, shall be preserved among the records of said Board. The Board may also employ such number of clerks and servants, and fix their salaries, and take such legal advice and employ such attorneys, as may be necessary to

the efficient, safe and economical discharge of the duties by this act devolved on said Board. And may also rent, lease, fit up and furnish such offices as the convenience of the Board, its officers, agents and employees, and the prudent and proper discharge of the duties of the Board, may require; and make such incidental and additional expenditures, having due regard to economy, as the purposes and provisions of this act, and the dangers to life and public health may justify and require; and may provide that any failure of any officer, agent or employee of the Board to duly fulfill his engagements or discharge his duty, shall cause a forfeiture of the whole or any less portion of the salary or compensation of such officer, agent or employee, as the rules or practice of the Board may provide. And the board of police is authorized to allow the board of health to occupy a portion of its premises.

SEC. 12. The authority, duty and powers, whether given by any law, or by any ordinance made thereunder heretofore (for the purpose of preserving or protecting life or health, or preventing disease) conferred upon or now belonging to, or being exercised by, the Board of Health, or the Board of Public Health of, or in the city of New York, or of, or in the city of Brooklyn, or elsewhere in said district, the mayor and common council of either of said cities, the mayor of the city of New York, by and with the advice and consent of the board of aldermen, the president of the board of aldermen, the president of the board of assistant aldermen (or councilmen), the resident physician, the health commissioner, the mayor and the commissioners of health, the commissioners of health, the city inspector (or the city inspector's department), of either of said cities; or conferred upon, or now belonging to any two or more of the said bodies or officers, or last-named boards or departments, or to any board of health or health officer or agent in said district, or exercised by any officer or person appointed by or deriving authority from any one or more of the bodies, officers, departments or last-named boards (so far as said powers and authority can be exercised and such duty performed by the Board hereby created, without interference with the proper discharge of the duties, other than the sanitary duties, heretofore imposed upon the board of Metropolitan police), are hereby exclusively conferred upon, and shall hereafter be exclusively exercised by, the aforesaid "The Metropolitan Board of Health;" the members and officers thereof, as herein provided; and the same are to be exercised as herein set forth (and to such an extent, and in such a

place and manner, as said Board may provide), for the greater protection and security of health and life in said district, and the appropriate parts thereof; and after this act goes into effect no salary or compensation shall be paid to any officer, board or agent, or in respect to any service, expenditure or employment under the authority of any health law, ordinance, regulation or appointment of or in said cities or any part of said district, unless such salary, expenditure or employment shall be authorized by the Board hereby created, and contemplated by the provisions of this act. And the aforesaid power, duty and authority hereby transferred to and conferred upon said Board shall be held to include all the power, duty and authority given, or conferred, or purporting to be given or to be conferred to or upon any person, officer or board, in or by any ordinance contained or purported to be contained in the first ten chapters of ordinances, being numbered from one to ten inclusive, in a compilation of "Laws and Ordinances relative to the Preservation of the Public Health in the city of New York," and purporting to be published under the authority and by the direction of the mayor and the commissioner of health of said city, in the year one thousand eight hundred and sixty, and by any existing amendments and additions thereto. But no fees of any kind shall be charged for the performance of any duties imposed by said ordinances. And said Board shall also possess (and may exercise by its own agents, or by order to be executed by said Board of Police), throughout said district, all the power and authority for the protection of life or health, or the care or preservation of health, or persons diseased or threatened therewith, conferred by any law or ordinance relating to any part of said district, and especially by the act of the seventeenth of April, eighteen hundred and fifty-four (being the three hundred and eighty-fourth chapter of the Laws of eighteen hundred and fifty-four), upon the mayor, common council, Board of Health, or the health officer (or upon any two or more of them, or other officers), in said act mentioned. But the powers and authority in this section given shall not be held to interfere with the powers and duties of the Croton Aqueduct Board, Street Commissioner, Superintendent of Unsafe Buildings, Comptroller of New York city, or the board authorized to contract for street cleaning (under the law of eighteen hundred and sixty-five); nor shall anything in the aforesaid laws or ordinances contained be construed as a limitation of any power in this bill elsewhere given to the said Board, or to limit the penalties

and expenses it may enforce or collect; and all the powers recited or given by said ordinances shall belong wholly to said Board, who may exercise the same without the advice, assent, or co-operation of any municipal board or officer, and in any manner not inconsistent with the other sections of this law, without being limited to the means or by the procedure in said ordinances stated. And no municipal body or other authority in said district shall hereafter create or employ any officer or agent, or incur any expense, under any of said (or other) health laws or ordinances, or in any respect of any matter concerning which said Board is by this act given control or jurisdiction. All the aforesaid powers are to be possessed and exercised, as fully as if herein repeated and separately conferred upon said Board.

SEC. 13. Said Board shall possess all the authority, and be charged with all the duties conferred or imposed upon the city inspector of the city of New York, by the act passed upon the second day of April, one thousand eight hundred and fifty-three, or by any and all acts relative to births, deaths, and marriages; and the duty of all persons and officers in any such (or any aforesaid) acts mentioned, shall hereafter be the same, in respect to said Board, as if the said law or laws had contained the name of said Board, instead of that of the city inspector of the city of New York (or other officer), and said acts are hereby extended throughout said district; but the powers now possessed by the city inspector with reference to the inspection of weights and measures are hereby conferred upon the mayor of the city of New York. And it shall be the duty of the said inspector, and of whoever may have possession or control thereof, to transfer and deliver to said Board all public books, records, statistics, and papers in his or their possession, or under his or their official or personal control, and to give such information to said Board, as he or his department may possess relative to any matter in this section, or in either of said last-mentioned laws referred to, and his authority and duties under said laws, shall cease when this act goes into effect, and the justices of the Supreme Court shall have jurisdiction to enforce this provision by mandamus. And said board shall perform all the duties by this section imposed, as a part of its regular duties, and no fees shall be demanded or received by reason thereof, or anything in said act or acts contained. It shall be the duty of the next of kin of any person deceased, and of each person being with such deceased person, at his or her death,

and of the person occupying or living in any house or premises in or on which any person may die, and of the parents of any child born in said district (and if there be no parent alive that has made such report, then of the next of kin of such child born), and of every person present at such birth, within five days after such birth or death, to report to said Board in writing, so far as known, the date, ward, and street number of said birth, and the sex and color of such child born, and the names of the parents, and the age, color, nativity, last occupation, and cause of death of such deceased person, and the ward and street, the place of such person's death and last residence. And for every omission of any person to make and keep the registry required by the acts referred to in this section, and for every omission to report a written copy of the same to said Board within ten days after any birth or marriage provided to be registered, and for every omission by any person to make the report of any death or birth, with the particulars as herein required, any person guilty of said omission, shall be liable to pay a fine of ten dollars, which may be sued for and recovered in the name of said Board, for the benefit of said Board. But no person shall be liable for such fine for not making the report herein required, if he or she shall prove that such report had been made to the Board by some other person before suit brought for such penalty, or that he or she was ignorant of such birth or death.

SEC. 14. *First*.—Whenever any building, erection, excavation, premises, business pursuit, matter or thing, or the sewerage, drainage, or ventilation thereof, in said district, shall, in the opinion of said Board (whether as a whole or in any particular), be in a condition or in effect dangerous to life or health, said Board may take and file among its records, what it shall regard as sufficient proof to authorize its declaration that the same, to the extent it may specify, is a public nuisance, or dangerous to life or health; and said Board may thereupon, enter in its records the same as a nuisance, and order the same to be removed, abated, suspended, altered, or otherwise improved or purified, as said order shall specify; and shall cause said order, before its execution, to be served on the owner, occupant, or tenant thereof, or some of them, which to said Board, may appear most directly interested in its execution, provided said parties, or any of them, are in said district, and can be found, and such service can be conveniently made; and if any party so served (or intended to be according to this law)

shall, before its execution is commenced, or within three days after such service or attempted service, apply to said Board, or the president thereof, to have said order or its execution stayed or modified, it shall then be the duty of said Board to temporarily suspend or modify said order or the execution thereof (save in cases of imminent danger from impending pestilence, when said Board may exercise extraordinary powers, as herein elsewhere specified), and to give such party or parties together, as the case, in the opinion of the Board, may require, a reasonable and fair opportunity to be heard before said Board, and to present facts and proofs (according to the rules or directions of said Board) against said declaration and the execution of said order, or in favor of its modification, according to the regulations of the Board; and the Board shall enter in its minutes such facts and proof as it may receive, and its proceedings on such hearing, and any other proof it may take; and thereafter may rescind, modify, or reaffirm its said declaration, and order and require execution of said original, or of a new or modified order to be made, in such form and effect as it may finally determine.

Second.—Said board may order or cause any excavation, erection, vehicle, vessel, water-craft, room, building, place, sewer, pipe, passage, premises, ground, matter or thing (in said District or adjacent waters), regarded by said Board as in a condition dangerous or detrimental to life or health, to be purified, cleaned, disinfected, altered or improved; and may also order any substance, matter or thing, being or left in any street, alley, water, excavation, building, erection, place, or grounds (whether such place where the same may be, be public or private), and which said Board may regard as dangerous or detrimental to life or health, to be speedily removed to some proper place; and may designate or provide a place to which the same shall be removed, when no such adequate or proper place, in the judgment of said Board, is already provided. The said Board may require the said Board of Police to execute any of the orders referred to in this act. It shall be the duty of the Board of Police to execute the orders of the said Board of Health, and the said Board of Police may employ the necessary persons and means about such execution. Or, the said Board of Health, if it shall consider the public health or interests so to require, may execute such orders through its own officers or persons, and means to be engaged by the said Board of Health; and about the execution of the said orders, both

the said Board of Police and the said Board of Health shall have, each, as well the authority conferred by this act as all the power and authority conferred by the fifty-third and fifty-fourth sections of the Metropolitan Police Act, passed on the twenty-fifth day of April, eighteen hundred and sixty-four, and of any amendments made to said act or to be made, enlarging such authority; and all powers and authority possessed and exercised by said Board of Police under said act pertaining to sanitary matters, or in conflict with the objects and purposes of this act, shall hereafter be enjoyed, possessed and exercised by said Board of Health, and the orders of the kind in this section secondly mentioned shall, if the proper person or persons are known to the Board, and can be conveniently found in said District, on whom to make the service, be served upon one or more of the owners, occupants, lessees, or tenants of the subject matter to which said order relates, or upon one or more of the persons whose duty it was to have done what is therein required to be done, as the case may render just and proper, in the opinion of said Board; and if said order is not complied with, or as far complied with as the Board may regard as reasonable, within five days after such service or attempted service, or within any shorter time which, in case of pestilence, the Board may have designated, or is not thereafter speedily and fully executed, then any such order may be executed as herein elsewhere provided in regard to any of the orders of said Board. And, if personal service of any aforesaid order cannot be made under this section by reason of absence from said District, or inability to find such persons therein, to be shown by the official certificate of the officer having such order to serve, then, service may be made through the mail, or by a copy left at the residence or place of business of the person sought to be served, with a person of suitable age and discretion, and the expenses attending the execution of any and all of such orders respectively shall be a several and joint personal charge against each of the owners or part of owners, and each of the lessees and occupants of the building, business, place, property, matter or thing to which said order relates, and in respect of which said expenses were incurred; and also against every person or body who was by law or contract bound to do that in regard to such business, place, street, property, matter or thing which said order requires, and said expenses shall also be a lien on all rent and compensation due, or to grow due, for the use of any place, room, building, premises, matter or thing to which

said order relates, and in respect of which said expenses were incurred; and also from the time of filing, as aforesaid, a lien on all compensation due or to grow due for the cleaning of any street, place, ground or thing, or for the cleansing (or removal) of any matter, thing or place, the failing to do which by the party bound so to do, or the doing of the same in whole, or in part, by order of said Board, was the cause or occasion of any such order or expense. Said Board of Health, its assignees, or the party who has under its order, or that of the Board of Police, acting thereunder, incurred said expense, or has rendered service for which payment is due, and as the rules of the said Board of Health may provide, may institute and maintain a suit against any one herein declared liable for expenses aforesaid, or against any person, firm or corporation, owing, or who may owe, such rent or compensation, and may recover the expenses so incurred under any order aforesaid. And only one or more of such parties liable or interested, may be made parties to such action as the Board may elect; but the parties made responsible as aforesaid for such expenses, shall be liable to contribute or to make payment as between themselves, in respect of such expenses and of any sum recovered for such expenses or compensation, or by any party paid on account thereof, according to the legal or equitable obligation existing between them. And it is hereby declared to be the duty of every owner and part owner and person interested, and of every lessee, tenant and occupant of, or in any place, water, ground, room, stall, apartment, building, erection, vessel, vehicle, matter and thing in said district, and of every person conducting or interested in business therein or thereat, and of every person who has undertaken to clean any place, ground or street therein, and every person, public officer and Board, having charge of any ground, place, building or erection therein, to keep, place and preserve the same, and every part, and the sewerage, drainage and ventilation thereof, in such condition, and to conduct the same in such manner that it shall not be dangerous or prejudicial to life or health. And in any suit in this action, or elsewhere in this act, authorized to be brought, the right of said Board or the Board of Police, to make any order or cause the execution thereof, shall be presumed. Any member of the police force, and every inspector or officer of said Board of Health, as the regulations of either of said Boards may respectively provide, relative to its own subordinates, may arrest any person who shall, in view of such member or officer,

violate, or do, or be engaged in doing, or committing in said district any act or thing forbidden by this act, or by any law or ordinance, the authority conferred by which is given to the said Board of Health, or who shall, in such presence, resist, or be engaged in resisting the enforcement of any of said orders of said Board, or of the Board of Police, pursuant thereto. And any person so arrested shall be thereafter treated and disposed of as any other person duly arrested for a misdemeanor. And said Board of Health, having first entered on its minutes, or filed in its records, what it may regard as adequate proof of a violation or resistance by any person in said district, of any such law, ordinance or order, may order (by its warrant, under its seal and attested by the signature of its president and secretary, and indicating, as far as conveniently practicable, the time and nature of the offence committed) the arrest of any such person, and such order of arrest shall be of the same effect and shall be executed as a warrant from a justice or judge, duly issued; and the party arrested shall be taken before a magistrate, and thereupon and thereafter, shall by all officers be treated as being, and have the rights and liability of, a party under arrest by order of the proper officer or tribunal, for a misdemeanor of the nature indicated in the said order of arrest. Proofs, affidavits and examinations as to any matter under this act may be taken by or before one or more members of the Board, or other person, as the Board shall authorize; and the secretary, the sanitary and assistant superintendent and any member of said Board shall, severally, have authority to administer oaths in such matters, and any person guilty of willfully testifying falsely shall incur all the pains and penalties of perjury. Any judge of the Supreme Court of any judicial district, wholly or partly within said sanitary district, or who is holding court or chambers therein, upon the written application of said Board or its president, to be made by or through its attorney or counsel, may issue his order by him subscribed, for the examination without unreasonable delay by or before such justice, of any person or persons, and the production of books and papers, or the inspection and taking of copies of the whole or parts thereof, at a time and place within said district, and in said order to be named; and it shall be the duty of such justice to take or superintend such examination, which shall be under oath, and shall be signed by the party or parties examined and be certified by said judge, and with any copies of books or papers be delivered to said Board or its secre-

tary, for the use of said Board. And such examination, and any proceeding connected therewith or under said order, may wholly or in part be had, conducted or continued by or before any other of said judges, as well as that one thereof who made said order; and in and about the same, every such judge shall have full power and authority to punish for contempt, and enforce obedience to his said or other order or directions respecting the matter aforesaid (or that of any other judge), as any such judge of the Supreme Court may now have or shall possess to enforce obedience or punish contempt in any case or matter whatever. Such application shall name or describe the person or persons whose examination is sought (and so far as possible the books or papers desired to be inspected), and the matters and points affecting life or health in said district as to which said Board requests the same to take place, and the judge shall, on the proceedings, decide what questions are pertinent and allowable in respect thereto, and shall require the same to be properly answered; but no answer of any person so examined, shall be used in any criminal proceeding. Service of any order of any such judge may be made, and the same proved in the same manner as the service of either an injunction or of a subpoena may now be made or proved. And it shall be the duty of all said judges to facilitate the early determination of the aforesaid proceedings.

SEC. 15. It shall be the duty of said Board to give all information that may be reasonably required concerning any threatened danger to the public health, to the Health Officer of the port of New York, and to the Commissioners of Quarantine of said port; who shall give the like information to said Board; and said Board and said Officer and said Quarantine Commissioners shall, so far as legal and practicable, co-operate together to prevent the spread of disease, and for the protection of life, and for the promotion of health within the sphere of their respective duties; and the authority and power of said Health Officer and Quarantine Commissioners is not by this act affected, save as last aforesaid, anything herein elsewhere to the contrary notwithstanding.

SEC. 16. And said Board shall use all reasonable means for ascertaining the existence and cause of disease or peril to life or health, and for averting the same throughout said district; and shall promptly cause all proper information in possession of said Board to be sent to the local health authorities of any city, village or town in this State, which may request the same, and shall add

thereto, such useful suggestions as the experience of said Board may supply. And it is hereby made the duty of said health authorities to supply the like information and suggestions to said Metropolitan Board of Health. And said Board may take measures, and supply agents, and afford inducements and facilities for general and gratuitous vaccination and disinfection, and may afford medical relief to and among the poor of said district, as in its opinion the protection of the public health may require, and may remove or cause to be removed to a proper place within said district, to be by them designated, any person sick with small-pox or other contagious disease. And in the presence of great and imminent peril to the public health in said district, by reason of impending pestilence, it shall be the duty of said Board to take such measures and to do and order, and cause to be done, such acts and make such expenditures (beyond those duly estimated for or provided) for the preservation of the public health (though not herein elsewhere or otherwise authorized) as it may in good faith declare the public safety and health to demand, and the Governor of the State shall also in writing approve. But the exercise of this extraordinary power shall also, as far as it involves such excessive expenditures, require the written assent of at least six members of the Board. And such peril shall not be deemed to exist except when, and for such period of time as, the Governor of the State, together with said Board, shall declare by proclamation the same to exist or continue.

SEC. 17. It shall be the duty of said Metropolitan Police Board (and of its officers and men, as the last named Board shall direct) to promptly advise said Metropolitan Board of Health of all threatened danger to human life or health, and of all matters thought to demand its attention, and to regularly report to said Board of Health all violations of its rules and of said ordinances and of the health laws, and all useful sanitary information. And said last named Boards shall, so far as practicable and appropriate, co-operate for the promotion of public health and the safety of human life in said district. And it shall be the duty of said Metropolitan Police Board, by and through its proper officers, agents and men, to faithfully, and at the proper time, enforce and execute the sanitary rules and regulations, and the orders of said Board of Health (made pursuant to the power of said Board of Health), upon the same being received in writing and duly authenticated, as said Board of Health may direct. And said Police Board is authorized

to employ and use the appropriate persons and means, and to make the necessary and appropriate expenditures for the execution and enforcement of said rules, orders and regulations; and such expenditures, so far as the same may not be refunded or compensated by the means herein elsewhere provided, shall be paid as the other expenses of said Board of Health are paid. And in and about the execution of any order of the Board of Health, or of the Board of Police, made pursuant thereto, police officers and policemen shall have as ample power and authority as when obeying any order of or law applicable to the Police Board, or as if acting under a special warrant of a justice or judge, duly issued; but for their conduct they shall be responsible to the Board of Police and not to the Board of Health.

SEC. 18. It shall be the duty of said Board, so far as it may be able without serious expense, to gather and preserve such information and facts relating to deaths, disease and health, from other parts of the State, but especially in said district, as may be useful in the discharge of its duties, and contribute to the promotion of the health or the security of life in the State of New York. And it shall be the duty of all health officers and boards of health in the State to communicate to said Metropolitan Board of Health copies of their reports, and also such sanitary information as may be useful in said district. And said Board shall keep records of its acts and proceedings as a Board, and of the execution of its orders, so far as reasonably practicable.

SEC. 19. It shall be the duty of said Board, on or before the first Monday of December in each year, to make a report in writing to the Governor of this State, upon the sanitary condition and prospects of said district; and such report shall set forth generally the statistics of births, deaths and marriages, the action of said Board and of its officers and agents, and the names thereof, for the past year, and may contain other useful information, and shall suggest any further legislative action or precautions deemed proper for the better protection of life and health, as well in other parts of the State as especially in said district. Such annual reports may contain the sanitary rules and by-laws adopted by the Board hereby created. And the annual report of said Board shall also contain a detailed statement under oath of the treasurer, of all money received and paid out by said board, or its treasurer, and a detailed statement of the manner of expenditures during the year last past, and of the funds on hand. Said Board may annu-

ally have, not exceeding one thousand copies of said report printed in an economical form, at the expense of said Board, and may distribute the same as shall be best adapted to promote the purposes of this law ; but a copy of said report shall be sent to each duly organized Board of Health in the State of New York, which may have requested such copy, and shall have furnished said Board with a copy of its own annual report.

SEC. 20. Said board may enact such by-laws, rules and regulations as it may deem advisable, in harmony with the provisions and purposes of this act, and not inconsistent with the constitution or laws of this State, for the regulation of the action of said board, its officers and agents, in the discharge of its and their duties, and for the protection of life and public health; and from time to time, may alter, annul or amend the same. And said board shall in like manner, before said rules and ordinances take effect, and for more fully carrying into effect the intents and purposes of this act, annually, on or before the tenth day of May, in any year, make and publish the same, twice a week, for three successive weeks next thereafter, in two daily newspapers published in the city of New York, and in one daily newspaper published in the city of Brooklyn, a "Code of Health Ordinances," for the protection of the public health in said district, to take effect on or after the first day of June next thereafter following, and to remain in full virtue, force and effect within said district for the term of one year, unless annulled; and all courts and tribunals, or any judge or justice thereof, shall take cognizance of, and give effect to, said ordinances and the several parts thereof, and may enforce such ordinances by a penalty not exceeding fifty dollars for each offence, recoverable in any justice's or district court, with costs; but nothing in this section contained, shall be construed as in any manner limiting any power herein elsewhere contained.

SEC. 21. Said Board shall cause to be kept a general complaint book, or several such books, in which may be entered by any person, in good faith, any complaint of a sanitary nature which such person thinks may be useful, with the name and residence of the complainant, and may give the name of the person or persons complained of, and the date of the entry of the complaint, and such suggestions of any remedy as may, in good faith, be thought appropriate, and said books shall be open to all reasonable public examination as the Board may authorize; and the Board shall

cause the facts in regard to such complaints to be investigated, and the appropriate remedy to be applied.

SEC. 22. Said Board may, from time to time, engage a suitable person or persons, to render sanitary engineering service, and to make or supervise practical and scientific sanitary investigations and examinations in said district requiring engineering skill, and to prepare plans and reports relative thereto. And it is hereby made the duty of all boards, officers and agents having the control, charge or custody of any public structure, work, ground or erection, or of any plan, description, outline, drawing, or charts thereof, or relating thereto, made, kept or controlled under any public authority, to permit and facilitate the examination and inspection, and the making of copies of the same by any officer or person thereto by said Board authorized; and the members of said Board, the sanitary superintendent or assistant aforesaid, any of the aforesaid sanitary inspectors, and such other officer or person as may, at any time, be by said Board authorized, may, without fee or hindrance, enter, examine and survey all grounds, erections, vehicles, structures, apartments, buildings and places in said district, including vessels of all kinds in the adjacent waters, and all cellars, sewers, passages, and excavations of every sort, and inspect the safety and sanitary condition, and make plans, drawings and descriptions thereof, according to the order or regulation of said Board. Said Board may make and publish a report of the sanitary condition, and the result of the inspection of any place, matter or thing in said district so inspected, or otherwise, as aforesaid, so far as, in the opinion of said Board, such publications may be useful. And said Board may provide a badge of metal, with a suitable inscription thereon, and direct and require it to be worn, in a position to be designated, by any person or officer under the authority of said Board, at such times and under such circumstances as the rules or by-laws of said Board shall direct. It shall be a misdemeanor, punishable by imprisonment in the county jail, or in the city and county of New York, in the penitentiary, for not less than one year, nor exceeding two years, or by a fine of not less than two hundred and fifty dollars, for any person, not an officer under this act, to falsely represent himself as such, with a fraudulent design upon persons or property, or to have, use, wear or display, without authority, any shield or other insignia or emblem such as worn by such officer. But no more than five

thousand dollars in one year shall be expended for sanitary engineering purposes.

SEC. 23. Said Board shall hold regular and special meetings, as frequently as the proper and efficient discharge of its duties shall require; the same to be held (unless it shall be impracticable so to do, or shall be, for good reasons, otherwise ordered) at the regular office of said Board in the city of New York; and the rules or by-laws shall provide for the giving of proper notice of all such meetings to the members of the Board. And all meetings shall, in every suit or proceeding, be taken to have been duly called and regularly held, and all orders and proceedings to have been duly authorized, unless the contrary be proved.

SEC. 24. It shall be the duty of said Board of Health to aid in the enforcement of, and, as far as practicable, to enforce all laws of this State, applicable in said district to the preservation of human life, or to the care, promotion or protection of health; and said Board may exercise the authority given by said laws to enable it to discharge the duty hereby imposed; and this section is intended to include all laws relative to cleanliness, and to the use or sale of poisonous, unwholesome, deleterious and adulterated drugs, medicine or food. And said Board is authorized to require reports and information (at such times and of such facts, and generally of such nature and extent, relating to the safety of life and promotion of health as its by-laws and rules may provide), from all public dispensaries, hospitals, asylums, infirmaries, prisons and schools, and from the managers, principals and officers thereof; and from all other public institutions, their officers and managers, and from the proprietors, managers, lessees and occupants of all theatres and other places of public resort or amusement in said district; but such reports and information shall only be required concerning matters or particulars in respect of which it may, in its opinion, need information, for the better discharge of its duties in said district. And it is hereby made the duty of the officers, institutions and persons so called on, or referred to, to promptly give such reports, verbally or in writing, as may be required by said Boards. And it is hereby further made the duty of all persons, officers and Boards to make to said Board of Health the reports and returns, and to give the information and to afford to said Board the aid and facilities, which by law or ordinance, they or any of them were required to make, afford, or give to any per-

son, officer or board, when any powers hereby conferred on said Board of Health were exercised by any other officer or board.

SEC. 25. Such Board shall not be required to make any return or report, or give any information or advice, or do any act which, under the former administration of the health laws in said district, was made necessary or appropriate by reason of the various officers, boards or agents by or through which said laws were executed or administered, or the powers hereby conferred were exercised; and said Board may establish reasonable regulations as to the publicity of its records and proceedings; and may publish such information as may in its opinion be useful, concerning births, deaths, marriages, sickness, and the general sanitary condition of said district, on any matter, place or thing therein.

SEC. 26. The department known as the "City Inspector's Department," and every bureau thereof, and so much of the twenty-seventh section of the four hundred and forty-sixth chapter of the Laws of eighteen hundred and fifty-seven, as relates thereto, and each and every office in the said district relating to public health, or the duties of which are conferred on said Board, except the Health Officers of the port of New York and the Board of Quarantine Commissioners and its officers, are hereby abolished. And no salary or compensation shall be due or paid by any officer or board whatever, to any officer or agent or board in said district for services to be rendered after this act goes into effect, or make any law or ordinance concerning life or public health, except under this act and as authorized by the Board hereby created. And all other boards and officers now existing in said district under or by virtue of any law or ordinance relating to public health, are hereby abolished; and no compensation shall be paid to or in respect of the same for any service rendered after this law shall go into effect, save as said Board of Health may authorize.

SEC. 27. All the sums of money provided or raised for meeting the expenses, compensation and payments provided by this act, or that may be authorized by said Board (except penalties and other sums received and amounts collected by suit as herein provided), shall be paid into the treasury of the State, and shall constitute a fund, to be, so far as needed, used by said Board in the performance of its duties and discharge of its obligations; and may, and shall be paid therefrom, on the order of the treasurer of said Board only as this act and the regulations of said Board may authorize. And unless this Board shall otherwise specially pro-

vide, all salaries and compensation for services and expense shall, so far as practicable, be paid quarterly. And any member or officer of said Board may, if a judge shall so order, be summarily examined upon an order (to be made on application and written affidavit on the oath of three freeholders of said district), requiring such examination, and signed by any justice of the supreme court of the first judicial district, and directing such examination to be publicly made, at the chambers of said justice, at a day and hour to be named, not less than forty-eight hours after personal service of said order, and such examination shall be confined to an inquiry into any alleged wrongful diversion or misapplication of any of said moneys or fund, or any other delinquency charged in said affidavit, touching their office or the discharge or neglect of duty of which it is alleged, in the application for said order, that such member of said Board or said officer has knowledge or information. And such member or officer shall answer such pertinent questions relative thereto as the judge shall direct, and the examination may be continued from time to time as such judge may order, but the answers of the party charged shall not be used against him on any criminal proceeding. The proceedings may be continued before any other judge in said district, and other witnesses, as well as the parties making such application, may, in the discretion of such judge, be compelled to attend and be examined touching such alleged delinquency; and such judge may punish any refusal to attend such examination or to answer any questions pursuant to his order as for and being a contempt of court. And such examination, affidavit, and orders shall be filed in the office of the county court of the county of New York. And in regard to this last examination and matters therewith connected, any such judge shall have all the powers and authority conferred in respect to the examination or proceedings mentioned in the fourteenth section thereof, as if herein repeated.

SEC. 28. The mayor and comptroller of the city of New York, and the mayor and comptroller of the city of Brooklyn, together with the members of said Board, created by this act, shall, on reasonable notice from said Board, convene at the office of the said Board of Health, as a board of estimate, a majority of whom shall form a quorum, and shall annually, on or before the first day of August, make up a financial estimate and statement, including all sums and expenses in arrear, and also any sum borrowed, as herein elsewhere provided for, of the sums required for the year, com-

mencing on the first day of January ensuing, annually (above any sums on hand), for the expenses and proper support, and for the discharge of the duties of said Board, including the proper expenses and disbursements of said Board, and of the members or officers thereof, in the discharge of their official duties, and for such other general or incidental expenses as may from time to time, in the judgment of said board of estimate, become necessary, with the enumeration thereof. But the sums raised for the expenses of any year shall not exceed one hundred thousand dollars in amount, independently of such sums as may have been expended in the presence of great and imminent peril to the public health in said district, by reason of impending pestilence, and independently of the sums herein elsewhere provided, to be paid by and recovered back from any person or corporation. And the expenses for the remainder of the current year after the passage of this act, to be reckoned at the said rate of one hundred thousand dollars a year, independently of said extraordinary expenses and of said sums to be paid or recovered back, shall be estimated and apportioned to the several cities, counties and towns, in said district as hereinafter provided, and collected in the next annual tax levies. Such estimate shall be accompanied by a written apportionment, made by said board of estimate, of the proportions of expenses applicable to, and to be paid by, each county, city and town, in said district. And in apportioning the salaries of the members of the Board, its officers, agents and employees, the following rules shall be observed :

1. The salaries and compensations of all members of the Board appointed to this Board, other than the Health Officer, from any county, and of all officers, agents, and employees thereof, whose principal sphere of duty shall be in any county, shall be apportioned against and paid by such county.

2. The salary of the Health Officer, and all general, office, contingent, and other expenses of the Board, not included in the first class, aforesaid, shall be apportioned against and paid by the respective counties and towns (or counties to which they belong), in the ratio of the taxable property, real and personal, of each, in said district, according to the assessment under which the last preceding taxes therein were respectively levied.

3. But no apportionment against any county (or town therein), other than the counties of New York and Kings, shall be made under the two foregoing clauses, unless as follows, that is to say:

Each other county (and each of said towns) shall have apportioned against it and shall pay all disbursements and expenses arising, caused, or ordered therein, to or by said Board, or for salaries and services, or portions thereof earned or rendered therein, as the regulations of said Board may provide; but such salaries and services will not include any portion of the salaries of the members of the Board or of its general officers.

4. It is further provided, in respect of each of said counties, that all the expenses caused by any act or any order of said Board, or the execution thereof in or for any particular county or part thereof, shall be apportioned to and be paid by said county or part thereof; and any sums collected in either shall be credited to such county or part thereof, unless the same was on account of expenses incurred in some other county, city or town, and in that event it shall be credited thereto. The said estimate and statement shall, at least ten days before the first day of September in each year, be submitted to the committee of revision, composed of the presidents of the boards of supervisors of the counties of New York, Kings, Westchester and Richmond, and of the presidents of the board of aldermen of the city of Brooklyn, and of the supervisors of the respective towns of Newtown, Flushing and Jamaica, in the county of Queens, who may meet, by a majority thereof, and consider and act upon the said estimate and enumeration on or before the first Monday of September in each year. If the said committee of revision on or before the second Monday of said September, shall object in writing to such estimate or apportionment, or any portion thereof, and so in writing, by said date, notify, or cause to be notified, the said board of estimate, it shall be the duty of the latter to immediately and carefully revise the same, and consider the same objections. If such committee shall fail to meet, or if said board of estimate shall adhere to their original action and estimate, or if they shall modify the same, but they shall not increase the same, then their final determination, apportionment and action shall be binding and conclusive upon all concerned. And the board of supervisors of the counties of New York, Kings, Richmond and Queens (the expenses in the last-named county to be charged and collected in, and in respect of the property of the towns of, Newtown, Flushing and Jamaica), respectively, are empowered and directed, annually, to order and cause to be raised and collected, by tax upon the estates, real and personal, subject to taxation according to law, within the said re-

spective counties and towns, their respective proportions of the sums of money as aforesaid, annually estimated and as apportioned and finally determined upon, as said total expenses and estimate aforesaid. The sums of money so respectively raised, as provided for in this act, shall be, by the proper officers, immediately and without deduction, paid into the treasury of the State, and shall constitute the separate fund herein elsewhere mentioned and provided, and be used only for the purposes of said Board, and shall be paid from the State treasury, under such appropriate regulations as shall be agreed upon between the Comptroller of the State, the State Treasurer, and the treasurer of said Board.

SEC. 29. The said Board may borrow on the credit of this act, and of the funds to be raised thereunder, such amounts (the borrowing of the same respectively to be first approved in writing by the Governor of the State) as may, in the opinion of said Board, be reasonably necessary and proper to enable it to discharge its duties and defray its expenses hereby authorized, up to the time when the requisite funds can be realized for said Board and purposes from the taxation and sources herein provided for and authorized; and such moneys so borrowed, with legal interest, shall be a charge upon and shall be repaid by the said counties and cities and towns in the proportion hereinbefore provided, and the amounts thereof shall, in addition to the requisite annual expense to secure a future annual fund, be included or allowed in the next or first annual estimate of the sums required and expenses as aforesaid, and shall, with interest, be included, and the amount, with interest, collected in and with the tax in this act provided for, and the same shall go into the said fund, and shall from thence, by the treasurer of the Board, be paid to or in favor of the parties entitled. And said Board may issue its certificates to those of whom it borrows money as herein authorized, under its seal, and signed by its president and secretary, and bearing interest at the rate of not more than seven per cent, and payable at a time not more than eighteen months from the date at which any sum may have been borrowed.

SEC. 30. Whoever shall violate any provisions of this act, or any order of said Board, made under the authority of the same, or of any by-law or ordinance therein referred to, or shall obstruct or interfere with any person in the execution of any order of said Board, or any order of the Board of Police, in pursuance or execution of the order of the Board of Health, or willfully omit to

obey any such order, shall be guilty of a misdemeanor and be liable to be indicted and punished for such offence; and in cases where it was made a misdemeanor to do or omit any act or thing, when any power or authority hereby conferred upon this Board were exercised by any other board or officer or officers, the omission or doing of such, or a corresponding act or thing, which this act requires, or contemplates to be done or forbids, shall in like manner be a misdemeanor, and the offender shall be liable to indictment and punishment for the same. A willful omission or refusal of any individual, corporation or body to conform to any sanitary regulation of said Board duly made for the protection of life, or the care, promotion or preservation of health pursuant to its power or authority, shall be a misdemeanor, and the person or officers guilty thereof shall be liable to indictment and punishment as for a misdemeanor. And all prosecutions and proceedings against any person for a misdemeanor under this act may be had or tried before any judge or tribunal having jurisdiction of any misdemeanor within said district, or within the town, city or village within which any such misdemeanor under this act was committed. And any person, corporation or body which may have willfully done or omitted any act or thing which is in this act, or any law or ordinance therein referred to, declared to be, or to subject the party guilty thereof to punishment for a misdemeanor, shall, in addition thereto, be subject to a penalty of two hundred and fifty dollars, to be sued for and recovered by said Board in any civil tribunal in said district, except that in the marine, or justice or county courts, no greater amount can be recovered than the extent of the jurisdiction in other civil suits. And any such suits may be against one or more, or each or all of those who participate in the act, refusals or omissions complained of, and the recovery may be against one or more of those joined in the action, as the justice or court shall direct. And the provisions of this section as to jurisdiction of tribunals and costs shall apply to all suits by said Board or its assignees, or the assignees of the Police Board under this act.

SEC. 31. Copies of the records of the proceedings of said Board, of its rules, regulations, by-laws and books and papers constituting part of its archives, when authenticated by its secretary or secretary *pro tem.*, shall be presumptive evidence, and the authentication be taken as presumptively correct in any court of justice or judicial proceeding, when they may be relevant to the point

Or matter in controversy, of the facts, statements and recitals therein contained; and the action, proceedings, authority and orders of said Board shall at all times be regarded as in their nature judicial, and be treated as *prima facie* just and legal.

SEC. 32. It shall be the duty of all prosecuting officers of criminal courts and police justices to act promptly upon all complaints and in all suits or proceedings for any violation of this act, and in all proceedings approved or promoted by said Board, and to bring the same to a speedy hearing or termination, and to render judgment and direct execution therein without delay.

SEC. 33. This act so far as it relates to the appointment of the Sanitary Commissioners provided for therein, shall take effect immediately, and shall, in other respects, go fully into effect, on the first day of March, eighteen hundred and sixty-six.

STATE OF NEW YORK, }
Office of the Secretary of State. }

I have compared the preceding with the original law on file in this office, and do hereby certify that the same is a correct transcript therefrom and of the whole of said original law.

FRANCIS C. BARLOW,
Secretary of State.

CHAPTER 686.

AN ACT to amend an act entitled "An act to create a Metropolitan Sanitary District and Board of Health therein, for the Preservation of Life and Health, and to prevent the spread of disease therein," passed February 26, 1860. Passed April 19, 1866, three-fifth being present.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

SECTION 1. Section twenty-one of an act entitled "An act to create a Metropolitan Sanitary district and Board of Health therein, for the preservation of life and health, and to prevent the spread of disease therefrom," passed February twenty-six, eighteen hundred and sixty-six, is hereby amended so as to read as follows:

SEC. 20. Said Board may enact such by-laws, rules and regulations as it may deem advisable, in harmony with the provisions and purposes of this act, and not inconsistent with the constitution or laws of this State, for the regulation of the action of said Board, its officers and agents, in the discharge of its and their duties, and from time to time, may alter, annul or amend the same; and said Board shall, in like manner, for more fully carrying into effect the intents and purposes of this act, annually, on or before the fifth day of May, in any year, make and publish twice a week for three successive weeks next thereafter, in two daily newspapers published in the city of New York, and in one daily newspaper published in the city of Brooklyn, a "Code of Health Ordinances" for the protection of public health in said district, to take effect on and after the first day of June next thereafter following, and to remain in full virtue, force and effect, within said district, until altered, amended or annulled; and may at any time alter, amend, or annul the same, or any part thereof, upon publishing the same as altered and amended, or such portion as is so altered and amended, and for a like time as said original ordinances; but during the year eighteen hundred and sixty-six, such code of health ordinances shall take effect at any time after it has been published, as aforesaid, for two weeks; and every person, body or corporation that shall violate or not conform to any ordinance, rule, sanitary regulation, or special or general order of said Board, duly made, shall be liable to pay a penalty not exceeding

fifty dollars for each offence, which may be sued for and recovered by and in the name of said Board, with costs, before any justice or tribunal in said district having jurisdiction of civil actions; and all such justices and tribunals shall take jurisdiction of such actions. And upon the complaint of any citizen of said district against any person for a violation of any rule, sanitary regulation, ordinance or order, made to any police justice or magistrate having jurisdiction in criminal cases, such justice or magistrate shall order the arrest of any person against whom such complaint is made, as in any other case of a criminal offence, and by his warrant may require any policeman or constable to make such arrest, and may, after such arrest, proceed summarily to try such person for such alleged offence; but no such trial shall be had on any arrest made in the city of New York, without sufficient notice thereof being first given to said Board, or its president. And upon application in behalf of said Board, made before the trial is commenced, the trial of such persons, together with the papers, shall be remitted to the court of special sessions, upon which court jurisdiction to try such persons is hereby conferred; but the right of any person to elect to be tried before a jury as it may now exist, is not affected by anything herein contained. If such person shall, upon such trial, be found guilty, he or she may be fined in any amount not exceeding twenty-five dollars; and the payment thereof may be enforced in the same manner as is usual in other cases where fines are imposed. Such fines, when collected, shall be at once paid over to the treasurer of said Board, to the credit of said Board. Reports of all such trials, and of fines imposed for violations of this act, or of the code of health ordinances hereby authorized, shall be made monthly to said Board by the justice before whom such trial is had. But nothing in this section contained shall be construed as in any manner limiting any powers, penalty and punishment in this act elsewhere conferred.

SEC. 2. Section thirty of said act is hereby amended so as to read as follows :

SEC. 30. Whoever shall violate any provisions of this act, or any order of said Board, made under the authority of the same, or any by-law or ordinance therein referred to, or shall obstruct or interfere with any person in the execution of any order of said Board, or any order of the Board of Police, in pursuance or execution of the order of the Board of Health, or willfully omit to obey any such order, shall be guilty of a misdemeanor and be lia-

ble to be indicted and punished for such offence, and in cases where it was made a misdemeanor to do or omit any act or thing, when any power or authority hereby conferred upon this Board were exercised by any other board or officer or officers, the omission or doing of such, or a corresponding act or thing, which this act requires, or contemplates to be done or forbid, shall in like manner be a misdemeanor, and the offender shall be liable to indictment and punishment for the same. A willful omission or refusal of any individual, corporation or body to conform to any regulation of said Board duly made for the protection of life, or the care, promotion or preservation of health, or the carrying out the purposes of this act pursuant to its power or authority, shall be a misdemeanor, and the person or officers guilty thereof shall be liable to indictment and punishment as for a misdemeanor. And all prosecutions and proceedings against any person for a misdemeanor under this act may be had or tried before any judge or tribunal having jurisdiction of any misdemeanor within said district, or within the town, city or village within which any such misdemeanor under this act was committed. And any person, corporation or body which may have willfully done or omitted any act or thing which is in this act, or any law or ordinance therein referred to, declared to be, or to subject the party guilty thereof to punishment for misdemeanor, shall, in addition thereto, be subject to a penalty of two hundred and fifty dollars, to be sued for and recovered by said board in any civil tribunal in said district, except that in the marine, or justice, or county courts, no greater amount can be recovered than the extent of the jurisdiction in other civil suits. And any such suits may be against one or more, or each or all, of those who participate in the act, refusals or omissions complained of, and the recovery may be against one or more of those joined in the action, as the justice or court shall direct. And the provisions of this section as to the jurisdiction of tribunals, parties and costs, shall apply to all suits by said Board or its assignees, or the assignees of the Police Board under this act. And said Board of Health may institute and maintain in its own name all such suits and proceedings as shall be reasonable, necessary and proper for recovering any moneys expended, enforcing the payment of any fine, the punishment for any offence, or in other respects carrying out the objects of this act. All processes and papers usual or necessary in the commencement and prosecution of actions, or for the collection of

money, in suits or proceedings under this act on execution, may be served by any policeman, and in and about such matters, the policeman so engaged shall have all the powers of marshals, and no fees shall be charged by any court, magistrate or clerk, for the issue of any paper or process, or the performance of any duty in suits under this act. Any civil action brought under or by authority of this act, shall be in the name or by the authority of said Board, and may be brought in any court in said district having jurisdiction in any civil action, to an amount as large as is demanded in such action; and if judgment be rendered for the plaintiff in any amount, costs of the court in which such action is brought shall also be recovered without reference to the amount of the recovery, provided payment was demanded before suit brought, and the defendant or defendants in the action against whom the recovery is had, did not, as the code of procedure authorizes, offer to pay an amount equal to the recovery against him or them, except that in cases where the recovery shall be less than fifty dollars, the amount of costs shall be ten dollars, and in case no recovery is had, the plaintiff shall not pay costs, unless the judge or justice, at the conclusion of the trial, shall certify in writing that there was not reasonable cause for bringing the action, and in such case the cost shall not exceed ten dollars, unless the amount claimed exceeds fifty dollars. No action shall abate, or right of action already accrued be abolished, by reason of the expiration, repeal or amendment of any ordinance, code of health ordinances, or regulations of said Board; nor shall any court lose jurisdiction of any action by reason of a plea that title to real estate is involved, provided the defendant is sought, by the pleadings, to be charged in said action on any of the grounds mentioned in this act, other than by virtue of ownership of such real estate. In respect to all proofs and proceedings by said Board, or its agents or officers, under this act, papers filed shall be deemed entered upon or in the minutes of the Board.

SEC. 3. Section twelve of said act is hereby amended so as to read as follows :

SEC. 12. The authority, duty and powers, whether given by any law, or by any ordinance made thereunder heretofore (for the purpose of preserving or protecting life or health, or preventing disease), conferred upon or now belonging to, or being exercised by, the Board of Health, or the Board of Public Health of or in the city of New York, or of or in the city of Brooklyn, or elsewhere

in said district, the Mayor and Common Council of either of said cities, the Mayor of the city of New York, by and with the advice and consent of the Board of Aldermen, the President of the Board of Aldermen, the President of the Board of Assistant Aldermen, (or Councilmen), the Resident Physician, the Health Commissioner, the Mayor and the Commissioners, the Commissioners of Health, the City Inspector (or the City Inspector's Department), of either of said cities; or conferred upon or now belonging to any two or more of the said bodies or officers, or last named Boards or Departments, or to any Board of Health or Health Officer or agent in said district, or exercised by any officer or person appointed by or deriving authority from any one or more of the bodies, officers, departments, last-named Boards (so far as said powers and authority can be exercised, and such duty performed by the Board hereby created, without interference with the proper discharge of the duties, other than sanitary duties, heretofore imposed upon the Metropolitan Police), are hereby exclusively conferred upon, and shall hereafter be exclusively exercised by, the aforesaid "The Metropolitan Board of Health;" the members and officers thereof, as herein provided; and the same are to be exercised as herein set forth (and to such an extent, and in such place and manner as said Board may provide) for the greater protection and security of health and life in said district, and the appropriate parts thereof; and after this act goes into effect no salary or compensation shall be paid to, or fees demanded by, or expense ordered to be incurred by any officer, board or agent, or in respect of any service, expenditure, or employment under the authority of any health law, ordinance, regulation, or appointment of or in said cities, or any part of said district, unless such salary, expenditure, employment, fees, or expenses shall be authorized by the Board hereby created and contemplated by the provisions of this act. And the aforesaid power, duty and authority hereby transferred to and conferred upon said Board shall be held to include all the power, duty and authority given or conferred, or purporting to be given or to be conferred to or upon any person, officer or board, in or by any ordinance contained or purporting to be contained in the first ten chapters of ordinances, being numbered from one to ten inclusive, in a compilation of "Laws and Ordinances relative to the Preservation of the Public Health in the city of New York," and purporting to be published under the authority and by the direction of the Mayor and Commissioners of Health of said city

in the year one thousand eight hundred and sixty, and by any existing amendments and additions thereto. But no fees of any kind shall be charged for the performance of any duties imposed by said ordinances. And said Board shall also possess (and may exercise by its own agents, or by order to be executed by said Board of Police), throughout said district, all the power and authority for the protection of life and health, or the care or preservation of health, or persons diseased or threatened therewith, conferred by any law or ordinance relating to any part of said district, and especially by the act of the seventeenth of April, eighteen hundred and fifty-four (being the three hundred and eighty-fourth chapter of the Laws of eighteen hundred and fifty-four), upon the Mayor, Common Council, Board of Health, or the Health Officers (or upon any two or more of them, or other officers) in said act mentioned. But the powers and authority in this section given shall not be held to interfere with the powers and duties of the Croton Aqueduct Board, Street Commissioner, Superintendent of Unsafe Buildings, Comptroller of New York city, or the Board authorized to contract for street-cleaning (under the law of eighteen hundred and sixty-five); nor shall anything in the aforesaid laws or ordinances contained be construed as a limitation of any power in this bill elsewhere given to the said Board, or to limit the penalties and expenses it may enforce or collect; and all the power recited or given by said laws or ordinances shall belong wholly to said Board, who may exercise the same without the advice, assent, or co-operation of any municipal board or officer, and in any manner not inconsistent with the other sections of this law, without being limited to the means or by the procedure in said ordinances stated. And no municipal body or other authority in said district shall hereafter create or employ any officer or agent, or incur any expense under any of said (or other) health laws or ordinances, or in respect of any matter concerning which said Board is by this act given control or jurisdiction. All the aforesaid powers are to be possessed and exercised as fully as if herein repeated and separately conferred upon said Board. And the powers of the Board shall be construed to include the ordering and enforcing, in the same manner as other orders are provided to be enforced, the repair of buildings, houses, and other structures; the regulation and control of all public markets (so far as relates to the cleanliness, ventilation, and drainage thereof, and to the prevention of the sale or offering for sale of improper

articles therein); the removal of any obstruction, matter or thing in or upon the public streets, sidewalks, or places, which shall be in their opinion liable to lead to results detrimental to the public or dangerous to life or health; the regulation and licensing of scavengers; the prevention of accidents by which life or health may be endangered; and, generally, the abating of all nuisances.

SEC. 4. Section five of said act is hereby amended so as to read as follows:

SEC. 5. Immediately after the four appointed Sanitary Commissioners shall have taken the oath of office as above provided, they shall meet with the Commissioners of the Metropolitan Police, and the Commissioners of the Metropolitan Police with them, and the Health Officer of the port of New York, and organize as a Board of Health by electing one of said Board to be President, and one of said Board to be Treasurer thereof, and by appointing a proper person to be Secretary of said Board. And the successive Presidents of said Board of Health shall be annually elected by the said Board from the members thereof, and the successive Treasurers shall be members of said Board; but the Secretary shall not be a member of the Board. The Treasurer and Secretary shall respectively continue in office as such until removed by the election of a successor or otherwise. The said Sanitary Commissioners shall each receive a salary of two thousand five hundred dollars a year, and each Police Commissioner who may be a member of said Board of Health, and the Health Officer, shall as such receive a salary of five hundred dollars a year; and the member of said Board of Health who acts as Treasurer, shall receive an additional compensation of five hundred dollars a year for his services as Treasurer. All salaries allowed under this law shall be payable as the Board shall provide. But for every regular or special meeting of said Board which any Sanitary Commissioner or the Secretary shall fail to attend, there shall be deducted from the salary of the person so failing, the sum of ten dollars; and for every failure of a Police Commissioner or of said Health Officer to attend any such meeting, there shall be deducted from his said salary the sum of two dollars; these provisions shall not apply to any adjourned meeting, and it shall be the duty of the Treasurer to see that all such deductions are made before payments of said salaries. The Board may appoint a corresponding secretary at an annual salary not exceeding one thousand dollars.

SEC. 5. Section fourteen, subdivision second, is hereby amended

by striking out the words "from the time of filing as aforesaid," where the same immediately follows the words "and also" in said subdivision.

SEC. 6. Said Board may, by resolution, confer upon the President power to exercise, in the absence of the Board, the authority given in the fourteenth section, to temporarily suspend or modify any order or its execution. And said Board may change or modify any order made under the first clause of the fourteenth section, except that in case where no hearing is asked for the party affected, the order shall not be so altered as to render more stringent than the original order.

SEC. 7. This act shall take effect immediately.

STATE OF NEW YORK, }
Office of Secretary of State. }

I have compared the preceding with the original law on file in this office, and do certify that the same is a correct transcript therefrom, and of the whole of said original law.

Given under my hand and seal of office, at the city of Albany, this twenty-first day of April, in the year one thousand eight hundred and sixty-six.

ERASTUS CLARK,

Deputy Secretary of State.

